Coal Age

December 9, 1926

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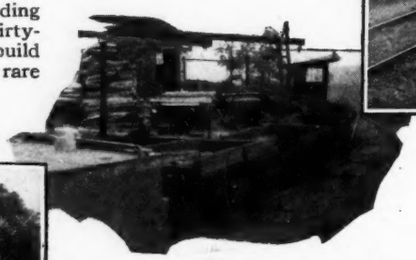

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

Volume 30 — New York, December 9, 1926 — *Number* 24

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Important Inventions

Scientists tell us that man has been on the earth for an unknown length of time approximating 15,000 years. During this period he has made many inventions and has raised his condition from practically that of a wild beast to his present state of civilization. But a search of his various means to self-improvement shows that two of his devices have had a greater uplifting effect than perhaps all the others. These are the invention of containers, particularly those made of pottery, and the invention of writing. Unquestionably man made a long step forward when he found ways and means of storing the bounties of nature in crude clay vessels. But perhaps he made an even greater stride when he made a visible sign represent an audible sound. Once articulate speech could be preserved and made intelligible to more than those that heard it progress became rapid.

The crude hieroglyphic and cuneiform characters of the ancients have long since given way to the far simpler and more efficient alphabets of the present. Printing has multiplied almost infinitely the dissemination of knowledge throughout the mass of humanity. Today almost every important calling has its technical or trade journal. These periodicals unquestionably have contributed much toward the extremely rapid progress that has been made during the past few decades.

It is an old proverb that "knowledge is power." He who would attain the maximum in his chosen calling must keep abreast of the times and conversant with the latest improvements. The easiest road, as well as the shortest, to this end lies through the pages of his own technical journal.

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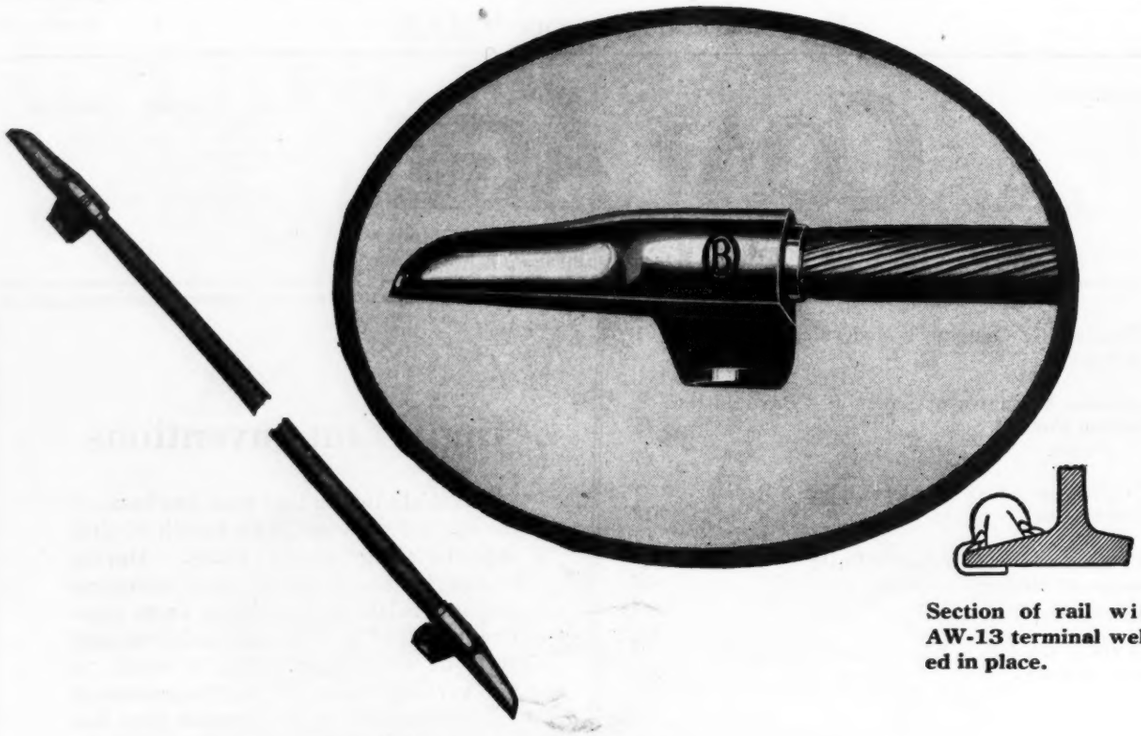

Section of rail with AW-13 terminal welded in place.

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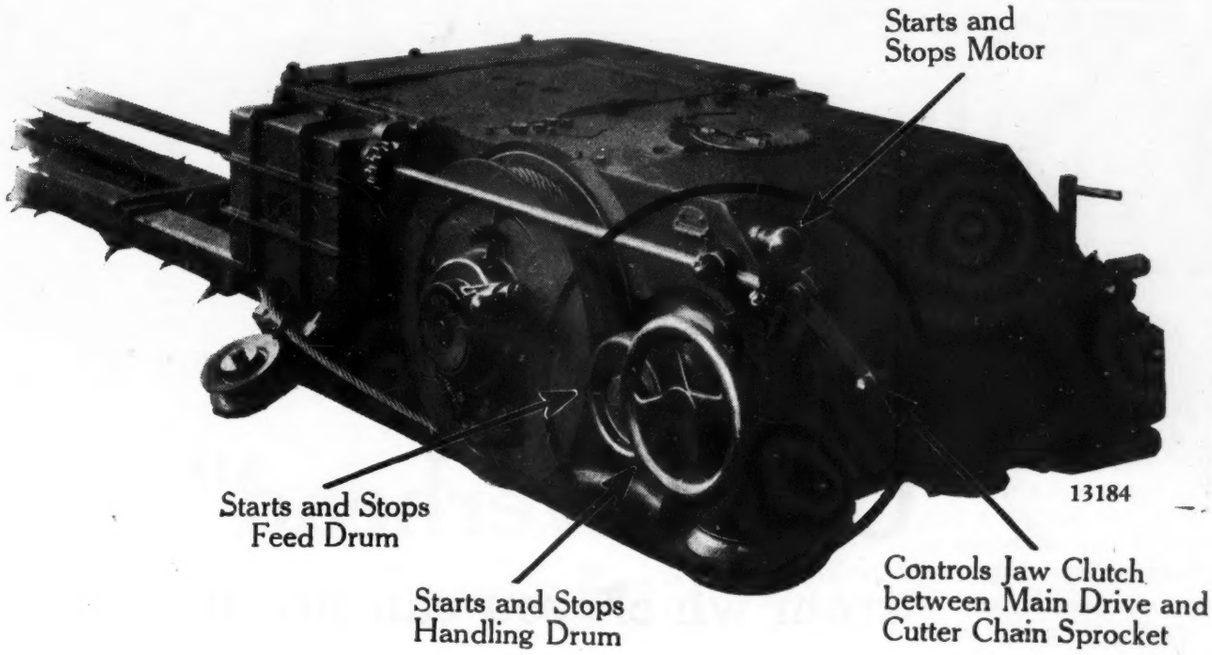

CENTERING all the controls at the left rear corner of the Jeffrey 35-B Shortwall Coal Cutter enables the machine runner to guide the cutter with his right hand.

This leaves his left hand free to lay skids as the cutter advances.

In low coal this centralized control saves crawling around the machine on hands and knees, adding to the comfort and safety of the machine runner and gaining valuable production time.

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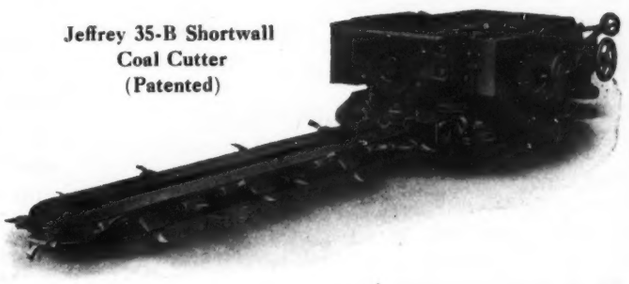

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from which you can profit

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COAL AGE

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Devoted to the Operating, Technical and Business Problems of the Coal-Mining Industry

R. DAWSON HALL
Engineering Editor

Volume 30 | NEW YORK, DECEMBER 9, 1926 | Number 24

Indirect Results of Mechanization

MECHANICAL LOADING and conveyor transportation have not been given all the credit they deserve. Mines in general are showing the results of the lessons which their applications have taught.

The necessity for more systematic inside superintendence, better co-ordination of shifts, and more reliable equipment including tracks, is soon impressed upon the management which attempts mechanization of a mine. The next step is a realization that even in those mines where the new order of mechanization has not been installed, economy calls for the same principles of superintendence, co-ordination and reliability. More concentrated mining, another principle which is being applied even to mines using neither loaders nor conveyors, was brought to a focus by experiences with mechanization and the general discussions of that subject. When measured by the indirect results alone, mechanization has had a tremendous effect on the industry.

Merchandising to the Fore

MORE AND MORE coal company executives are coming to realize that management which is concerned only with the production problems of the industry cannot hope to attain complete success. With developed plant capacity far in excess of normal consumer demands, the day when the natural growth in general business and the increase in population could be counted upon to absorb the output of the mines has passed. The industrial and transportation crises which create abnormal markets grow less and less frequent. Were they to be wiped out the industry would be better off.

The importance of the technical problems of mining cannot, and should not, be minimized. But what shall it profit the operator to spend sleepless nights and invest thousands of dollars to lower production costs two cents per ton if improper distribution rob him of ten times that saving? It is a truism of business that goods well made are half sold. So, too, good coal properly prepared is half sold. The trouble is that with too many producers merchandising ends at that point. Lack of knowledge of consumer requirements, incomplete understanding of competitive conditions reduce distribution to the level of peddling.

Intelligent merchandising presupposes a thorough knowledge of the product to be sold and the territories in which it may be most effectively distributed. Thorough knowledge of the product, its characteristics and its uses can be acquired with no great difficulty by any producer who is willing to devote the necessary time and money to a scientific study of what he is selling. The raw materials for such a study are readily available. When, however, an attempt is made to carry the investigation into the question of territorial distribution, the data open will be found to be antiquated and incomplete.

The most recent national survey of bituminous coal distribution is eight years old. Moreover, it was based upon conditions which were abnormal from the standpoint of demand and abnormal from the standpoint of distribution. Since the time that survey was made there have been notable changes in production trends and equally important shifts in distribution. And even these cannot be quantitatively measured with the degree of accuracy necessary for intelligent, comprehensive planning. In the absence of definite, current figures too much must be left to individual experience and opinion.

Obviously what is needed, if an intelligent study of distribution is to be made, is the current and continuous compilation and dissemination of data showing the movement of coal by originating districts and consuming states. Certain railroad agencies are collecting such information for limited areas and for their own uses. A start in the right direction would be made if that information were thrown open to public inspection. But it would be only a start.

The industry and the public at large cannot hope for complete information until such time as the Interstate Commerce Commission shall see fit to require the railroads to file monthly reports giving these facts. The railroads are the logical compilers because they alone have full data and the Interstate Commerce Commission is the logical agency for consolidating such reports and making them available to the public. When such reports are required there will be less waste in selling and less waste in buying.

The Science of Buying

CONSCIOUSLY, or unconsciously, the majority of the people of the United States mold their habits in accordance with the advertising with which they come in contact. Regardless of the nature of this advertising—magazine, car or billboard, or the personal plea of salesmen—it has a steady and tremendous power through the influence it exerts on the buying public. One evidence of the important position which advertising, and therefore the science of selling and merchandising, holds in the opinion of business and industrial leaders, is apparent from the now increasing number of executives being chosen from the ranks of the salesmen rather than from among the operating or technical men. Advertising and selling are perhaps the most essential, and certainly the most distinctly American, phases of our business and industrial life. Both are desirable, helpful and constructive influences; as such, their importance has been generally recognized and stressed.

Although the science of selling has been emphasized, study of the science of buying has been practically neglected. The average consumer usually buys because he has been influenced in some manner and not on a careful analysis of his actual needs. Ignorance of the

true value of an article, failure to determine or seriously to consider its practicability when applied to his particular needs, unreasoning prejudice and sometimes even notional ideas, all serve to seriously weaken his true purchasing power.

As individuals, our buying capacity is limited and an article purchased heedlessly or carelessly may prevent us from acquiring another which might be better suited to our immediate needs. No one, be he millionaire or pauper, can afford to respond to all of the importunities to which he is continually subjected and in which wisdom, prudence and thrift sometimes play but little part. When someone or something "sells" us, we may be wasting or weakening our buying capacity. But when buying from choice, and on our own initiative, we are much more likely to purchase only what we actually need or that which is better suited to our particular wants than the article we are now using.

What has just been said with reference to individual purchasing, applies with equal force to corporate buying. If your company is not purchasing its equipment, whether new or replacement, on a scientific basis as a result of a continual and careful study of its true needs, it is undoubtedly losing money. Should your net income at the end of the year be lower than your policy of "modernization" seems to warrant, you are not justified in blaming it on your personnel, the equipment or economic conditions in the industry, until you have ascertained that you are buying, as well as selling, scientifically.

A Warning and a Lesson From the British Isles

BOTH A WARNING and a lesson may be drawn by the mine operators and workers of the United States from the British strike which is now rapidly passing into history. For with the return to work of nearly 400,000 British miners under an agreement made independently of the national organization, one of the most disastrous labor difficulties in the history of industrial civilization comes virtually to a close. It cannot be said to have ended, for the effects of this prolonged strike will be felt by the Empire in general and the British Isles in particular long after the last of the mines has been re-opened.

The mine workers may be considered to have lost the strike for they failed to obtain a national agreement; their national organization is virtually destroyed; they have accepted longer working hours without a corresponding increase in wages; the government has ceased to maintain a direct interest in the management of the coal industry; their wage loss has been tremendous; and it is estimated that between 200,000 and 250,000 of them, engaged before the strike, will no longer be employed as coal producers. But the public, the industry, and the mine operators of Great Britain all have suffered great financial losses as a result of the strike which has been in effect nearly seven months. An accurate estimate of the total cost is practically impossible but the most conservative observers place it at not less than $1,500,000,000 or about one-tenth of the annual British income.

Coal mining and the coal export business are seemingly of much greater importance to all phases of industry in England than they are in this country. As a result of the coal strike, Britain's iron and steel industry was forced to practically suspend operations, rail service was seriously crippled and, because of the necessary curtailment of operations in many industries, widespread unemployment resulted outside the ranks of the striking miners. Because of the importance of our non-unionized coal fields, it is most unlikely that a strike of similar magnitude and duration would have as serious consequences in the United States as it has had in the British Isles.

Like the proverbial ill wind, the strike benefitted some of Britain's maritime provinces. This is particularly true of Nova Scotia where the demand for export coal resulted in greater daily production than at any other time during the last eleven years. Even though the mines of England, Wales and Scotland were to resume capacity operations immediately, the collieries of Cape Breton would be kept operating at maximum capacity throughout the winter producing coal for shipment to the British Isles. However, Canada as a whole, as well as other parts of the Kingdom, will welcome the resumption of operations by the British mines. For the gains that have accrued to Nova Scotia as a result of the strike are offset by the definite decline in Great Britain's purchasing power and the consequent reduction in the volume of her imports from her provinces. Considering Canada only, her exports to Britain decreased about 6 per cent in July, approximately 30 per cent in August and September and even more than that in October.

Although it is true that the United Kingdom will undoubtedly regain the greater portion of the trade temporarily lost through the strike, there is no doubt but that the readjustment will be gradual. However, the question of greatest interest to all is whether the domestic and industrial fuel markets, lost through the adoption of oil and other "substitutes," can be won back to coal. If not, internal consumption of coal in England may stabilize at or below the pre-strike level. Should this eventuate, in conjunction with the reduced export demand which developed before the strike, peace in the industry will be but temporary. For if the British Isles were unable to find permanent employment for their million coal miners before the strike, a lessened demand for this fuel would make this inability even greater now. Apparently, therefore, a study of the next few months of the coal industry in England will be of as much importance and interest as those which have just passed.

MYSTERY.—The wonderful thing about man is the way he builds his life on mystery, draws his inspirations out of mystery, hopes where he does not know, dreams where he does not see and believes where he cannot prove. Knowledge is no more than an island here and there, which lifts itself a little way above the waves while the great ocean of mystery round about laps all the shores of thought.—*Philadelphia Public Ledger.*

SOFT JOBS come to those who have done hard jobs well, and easy money is postponed payment that comes to the man who has earned hard money.—*William Feather.*

AS a restraining force, conscience gets a lot of credit that really belongs to cold feet.—*Pacific Coast Bulletin.*

One Mine Typifies Big Company's Modernization

All of Western Firm's Seventeen Operations To Be Modernized and Mechanized—One Plant Serves as Experimental Laboratory—Many Schemes Have Been Tried Out Here—Complete Mechanical Operation Is Goal Sought

By George J. Young
Western Editor, *Coal Age*, San Francisco, Calif.

A COAL PRODUCTION of about 3,000,000 tons per annum is attained by the Union Pacific Coal Co., a subsidiary of the Union Pacific R.R., from seventeen coal mines in Wyoming. The operations are in three widely separated groups, Cumberland on the west; Hanna on the east, and Rock Springs, Superior, Reliance and Winton between these two extremes. All mines are operated under one management and supply the fuel requirements of the railroad. Eugene McAuliffe, president of the coal company, has undertaken the task of modernizing the methods followed in the mines which have been operated over a long period of years.

During the period in which coal has been produced some old mines have been worked out and new ones opened. A series of workable beds has made this possible. The problem of modernizing an existing group of mines is not an easy one. Custom and individual prejudices have to be overcome. Instruction in new methods and appliances is necessary. Mine layouts have to be improved. Obsolete equipment must be eliminated gradually. Such a campaign requires several years of patient work before substantial progress can be noted. However, much has already been accomplished.

The managerial structure is of interest. Under president McAuliffe is a manager, George B. Pryde, who is in general charge of operations. A. W. Dickinson, an engineer, is general superintendent. A group of staff engineers occupies intermediate positions. These include: chief electrician, D. C. McKeehan; safety engineer, J. A. Smith; ventilation engineer, J. V. McClelland; standards engineer, F. V. Hicks; chief engineer, C. E. Swann; and mechanical engineer, A. W. Henkle. A superintendent with assistant, master mechanic, electrician and foreman, is in charge of each mine or where there are several contiguous operations he is in charge of the group. Thus each mine has the advantage of contact with general staff men experienced in their several specialties. Changes in operating methods are passed down through the organization after a general plan has been worked out by the staff which holds meetings when necessary.

A central power plant is operated at Rock Springs and supplies current by transmission lines to the mines at Rock Springs, Reliance, Winton and Superior. Other mines are also supplied with power as is the city of Rock Springs. A general warehouse for mine supplies is maintained at Rock Springs. The company operates stores and provides housing facilities for its workers. A consistent plan for welfare work is in operation and an excellent employees' magazine full of human interest with now and then a technical or semi-technical article is published.

No. 8 mine is in Rock Springs. Frank L. McCarty is superintendent and M. W. Medill, assistant superintendent. Production is 1,400 tons per day with 164 men, of whom 73 are hand loaders and miners and 12 are on rock work. Loaders average 14 to 15 tons per shift. This operation is a drift mine, a rock drift connecting with a main, 6-deg. slope, equipped with 40-lb. rails on 36-in. gage. The main haulage is equipped with 56-lb. and entries with 20-lb. rails. Ties are treated. They are 6x7-in. in section and 5 ft. long hewed to dimensions. They are bought in 10-ft. lengths. Mine layout is on the triple and double-entry system. Rooms are driven at an angle of 45 deg. to the haulage entry. The bed worked ranges from 7 to 10 ft. in thickness with variable roof and floor conditions.

Chain pillars are 38 ft. in width with breakthroughs at 50-ft. intervals. Barrier pillars are about 50 ft. thick. The slope is protected by 100-ft. pillars. Loading and back entries are 10 ft. in width and spaced 350 ft. apart. Airways are in general kept about 100 sq.ft. in section. Manways parallel the slope and rock drift. A 6-ft. Jeffrey fan exhausts air from the mine, averaging 120,000 cu.ft. per minute at 1.4 in. water gage. Drainage is effected through No. 4 mine, the water being returned to the pipe system used in sprinkling. Little or no gas is encountered but electric cap lights are used and both sprinkling and rock dusting are consistently applied.

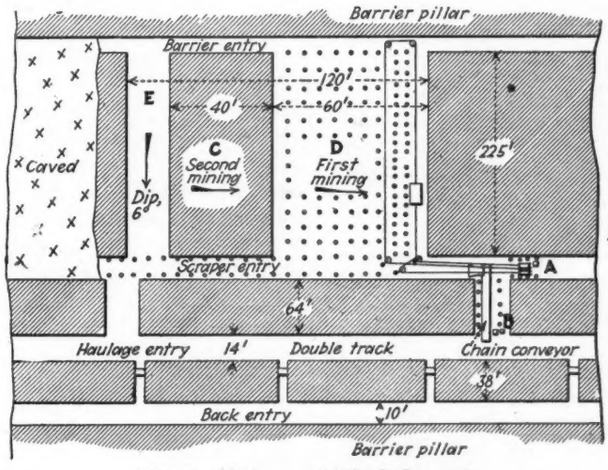


Fig. 1—Entry and Block Layout

This is the original plan followed in loading by means of the scraper and conveyor. Operation on this plan required a three-drum hoist, and one conveyor.

Roof and pillar mining is not now of special interest as it has been supplanted by other methods. For a definite period No. 8 mine has been made a laboratory for the trying out of methods that have for their objective co-ordination with power loading devices. A Goodman 3-drum power scraper was installed and is in operation. To block out a unit four entires are generally driven, a 14-ft. haulage, a 10-ft. back entry, a 10-ft. entry cutting off the tops of the blocks from the barrier pillar and a 14-ft. scraper entry. The layout of a

unit is shown in Fig. 1. The mineable area with one placement of the hoist, (*A*) Fig. 1, and one placement of the short chain conveyor, (*B*), is 120x225 ft.

After cutting the scraper entry and driving a pioneer cut dividing the unit into a 60-ft. and a 50-ft. block (*C* and *D* respectively), a 225-ft. face is advanced parallel with the dip through the 50-ft. block on the right, by machine undercutting, drilling and blasting. Each advance of the face requires a shift of the guide sheaves. The sequence of operations is first, undercutting to a depth of 7 ft. followed by the drilling machine. It takes seven hours for undercutting and two men follow up with electric drills, two lines of holes being placed, one 3 ft. from the bottom and the other 2 ft. from the top. Four holes are sunk from each position of the drill column. Holes are at an angle to the face and are 8 ft. apart, the bottom ones being midway between those at the top. Timbering with 10-ft. props and short head boards closely spaced are placed in advance of the machine cut. Thus a single shift is required for timbering, undercutting and drilling.

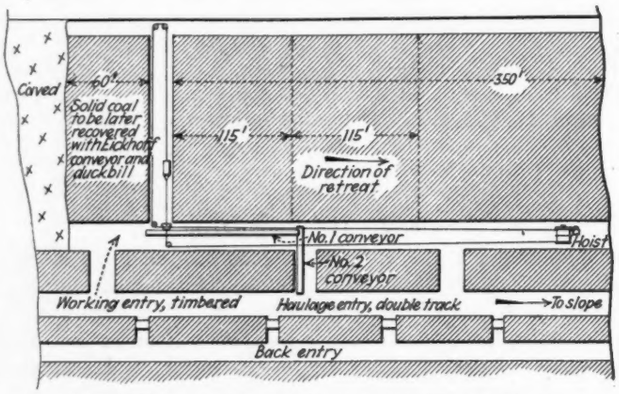


Fig. 2—Improved Layout for Scraper Loading

By this plan the coal is mined in successive blocks 115 ft. wide retreating toward the main slope. Two conveyors and a double-drum hoist are utilized in this plan of operation.

The scraper takes a 4-ton load. It is a 3-sided open-bottom box with head and tail rope attachments. The box rides upon the coal pile and when advanced by the head line picks up its load. The right angle turn at the lower end of the face is effected by a third line. The scraper discharges upon a heavy steel sole plate provided with sides, up which the coal is pushed into the conveyor. The conveyor is of the chain type, 42 in. wide and 64 ft. in length and is mounted on wheels for convenience in shifting. Skirt boards are used to confine the load at the sides. A three-drum hoist driven by a 125-hp., 2,300-volt alternating-current motor operates the scraper lines.

The conveyor is operated at a maximum speed of 350 ft. per minute by a 20-hp. direct-current motor. A wire-rope car haul driven by a 3-hp. direct-current motor, is used to advance the cars to the loading point. Both the car haul and conveyor are controlled from a point at the side of the discharge end of the conveyor. Flood lights are used to illuminate the scraper runs. The main or headline rope is of $\frac{7}{8}$-in. diameter and the tailrope is $\frac{3}{4}$ in. in diameter, both being operated at a speed of 350 ft. per minute, a round trip requiring about 3 minutes. The maximum output per shift is 530 tons with an average of 350 tons being regularly maintained. The face is thoroughly loaded out. This requires on the windup, digging into the face coal, for which purpose teeth are provided on the side of the scraper. It also requires angling the scraper, which is accomplished by shortening up one of the front shackles. Two or three men are required at the car loading point and from 15 to 19 men in all to operate the entire rig. To move the conveyor and scraper outfit to a new point requires 30 hr.

While the first block *D*, Fig. 1, is being mined a pioneer cut is made on the remaining block *C* at the point *E*. A thin pillar of coal is left on the side next to the cave. The block *C*, when *D* is finished, is then mined by successive undercuts advancing toward the timbered area *D*. No timbers are used in mining this area so that when it is finished the open space is about 120 ft. along the strike and 240 ft. along the dip. Approximately half of the area is supported on props and half by a narrow pillar at the side. The exposed area, timbered and untimbered, is 27,000 sq.ft.

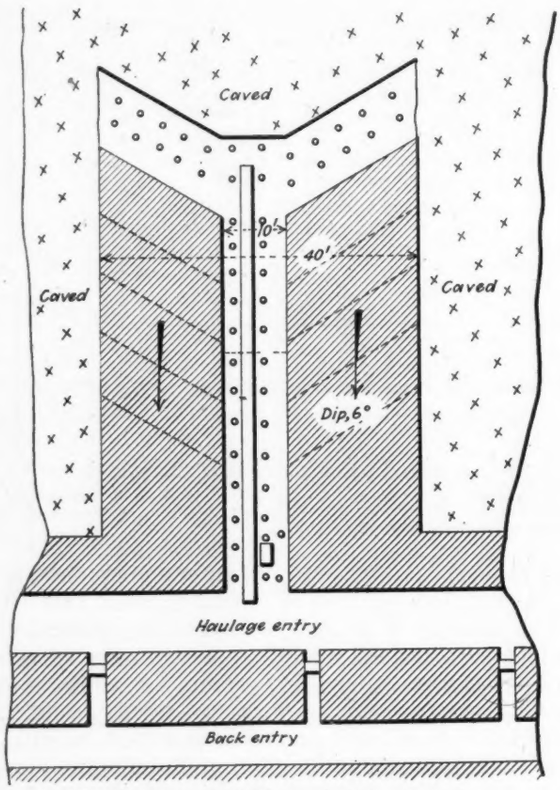
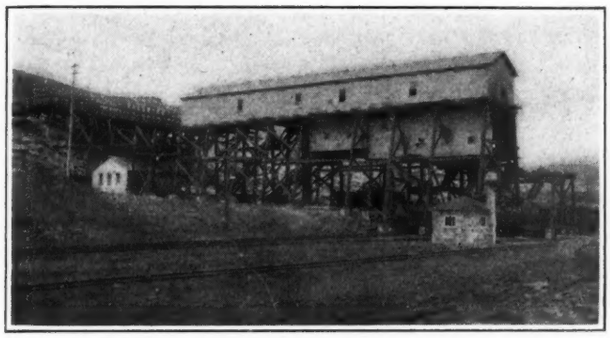


Fig. 3—Proposed Plan of Pillar Recovery

This plan anticipates removal of the pillar by means of a jigging conveyor provided with a duckbill extension that aids in loading. The pillar is drawn back by successive slices or undercuts as far as the barrier, which eventually will be recovered also.

Props are drawn retreating toward the solid at the right and caving begins at or near the center and progresses to the solid as the props are pulled. Precise figures on prop requirements are not available but it is estimated that of 300 10-ft. props for each 10,000 tons of coal which will be necessary, 50 per cent can be saved for use again. Heavy props 10 in. in diameter are the rule. Apparently the large area, open and on timbers, can be handled although mining engineers generally would be averse to such a practice. Obviously control of the situation involves the condition of the roof and the rapidity of mining. If local roof weakness showed itself over the timbered area it would call for a reduction in the width of working from 120 ft. to a smaller figure. Publishing of the actual history of each unit mined under these conditions would be a valuable contribution to



Tipple at No. 8 Mine

This mine, located at Rock Springs, has served as a kind of an experimental laboratory for other operations working under the same or similar conditions.

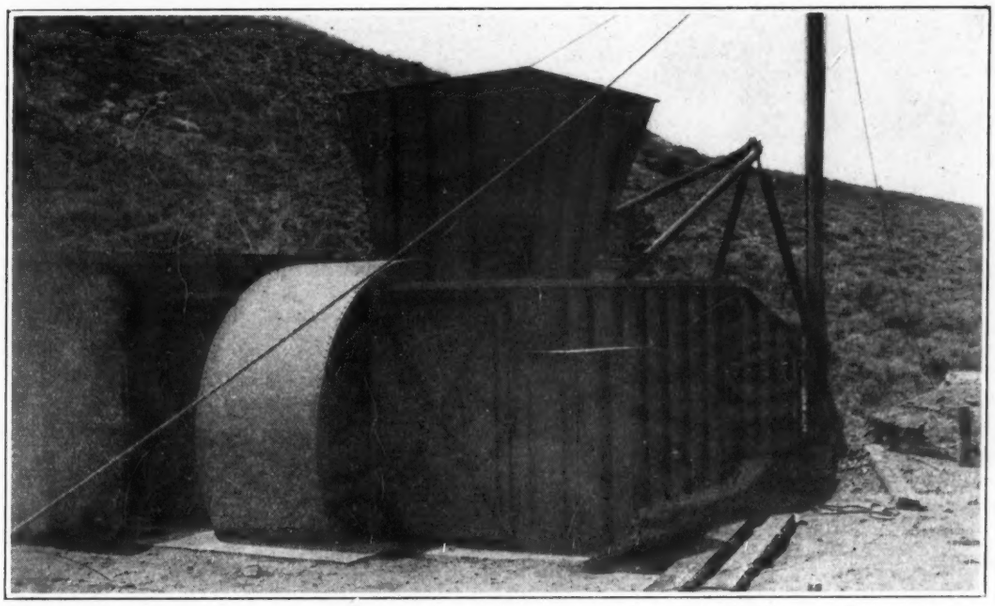
the operating literature of the coal mining industry.

A modification of the foregoing method has been worked out and at the time of my visit equipment was on the ground for the initiation of this new scheme. Fig. 2 is a sketch of the details of the layout. Four entries are required as in the old method. Two conveyors both of the chain type, are to be used. No. 2 conveyor brings the coal to the loading point on the haulage entry. No. 1 conveyor is placed in the working entry. The scraper discharge apron feeds No. 1 conveyor which is of sufficient length to serve one unit about 115 ft. in width. When this is worked out and caved, it is planned to cut a new scraper-way in the next block by means of the Eickhoff conveyor and its loader.

One placement of the hoist will be made for the working of two successive blocks, each about 115 ft. in length along the strike. The right-angle turn of the scraper is avoided and a two-drum hoist will replace the three-drum machine necessary where this turn is used. The working of a 115-ft. unit will be the same as in the old method except for the modifications enumerated. Present plans embrace equipment for the operation of four units and it is expected that the entire production of the mine will be made with them. The depth of undercut is to be increased, an 8-ft. cutter bar replacing the 7-ft. bar now used. A new design of scraper has been evolved. This has a movable back or flap attached at the top. By the use of this rig the scraper on the back haul cuts into the pile of coal instead of riding up over it.

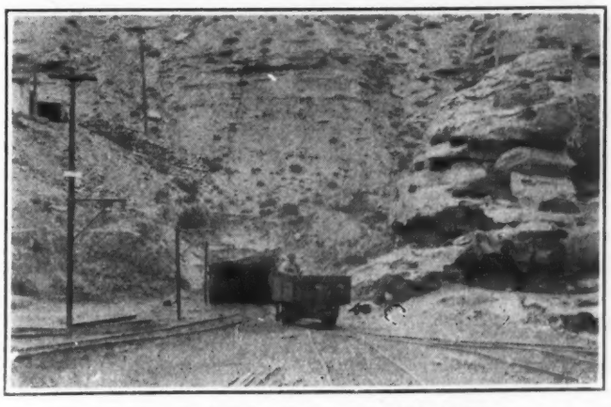
Reciprocating conveyors of the Eickhoff type have been installed in No. 8 mine and also in the *C* mine at Superior. They are used in driving narrow work from an entry to the rise and in mining pillars. By the use of a telescopic end piece, the McCarty "duck-bill loader," it is practicable to load out a large proportion of the coal mechanically. Four successive cuts and cleanups have been made in 8 hr. or a total advance of from 24 to 26 ft. This is an important achievement.

At present it is the practice to place the motor drive and reciprocating mechanism upon a concrete foundation close to the discharge end at the entry. For driving an auxiliary conveyor at right angles to the loading conveyor, various rigs have been tried out but none have proved as satisfactory as a separate drive, motor and reciprocating mechanism, installed at the discharge end of the auxiliary machine. The method of working out a pillar is shown in Fig. 3. In this case a 10x6-ft. working is extended on the center line of the pillar to its limits. At the further end the top coal is removed, the rooms at an angle are driven off on either side, an



Ventilation Fan

This fan is inclosed in a steel and concrete housing. It serves a vertical shaft of circular cross-section that is 372 ft in depth. It is located at the C mine at Superior and operates exhausting.

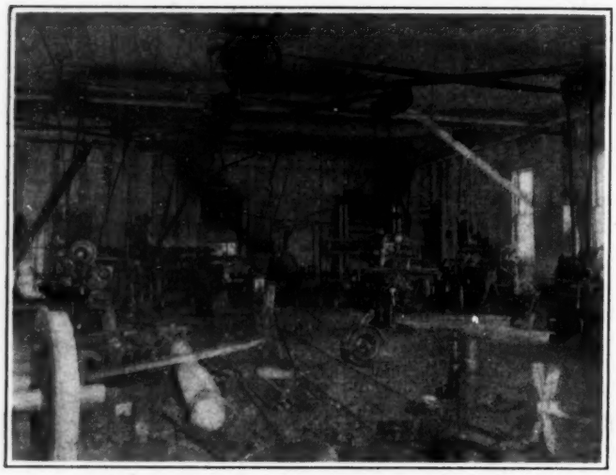


Portal of Rock Tunnel at No. 8 Mine

The "wind-carved" rocks in the right foreground give an idea of the nature of the overburden above the coal. This is chiefly sandstone—sometimes massive—together with shale and slate.

end pillar being left next the cave. This is sliced to the gob. Props are drawn and the end caved. The pillar is thus worked back to its lower limit. Narrow work, entry driving, pioneer cuts and preparatory work can be accomplished with reciprocating conveyors in various combinations.

Dust barriers are erected at every important intersection and in every back entry. These consist of 16 V-troughs, eight on each side of a given center. Main drift, slope and manways are rock-dusted regularly.

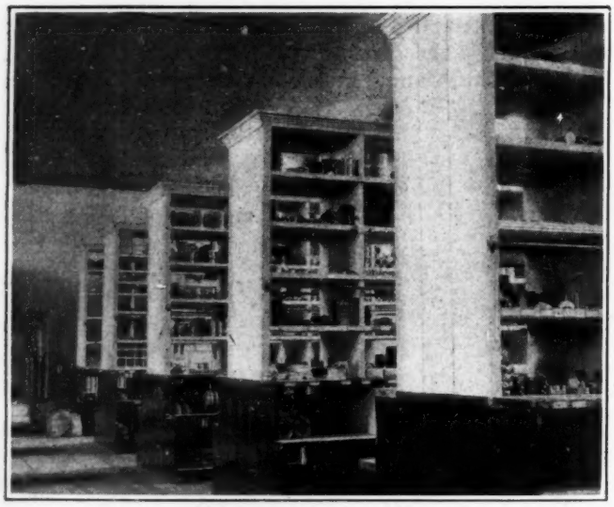


Interior of Machine Shop at No. 10 Mine

An adequate machine shop is a prime requisite at any modern mine. As more machinery and mechanical and electrical devices are added to coal producing equipment the importance of proper repair and maintenance facilities will become ever larger and larger.

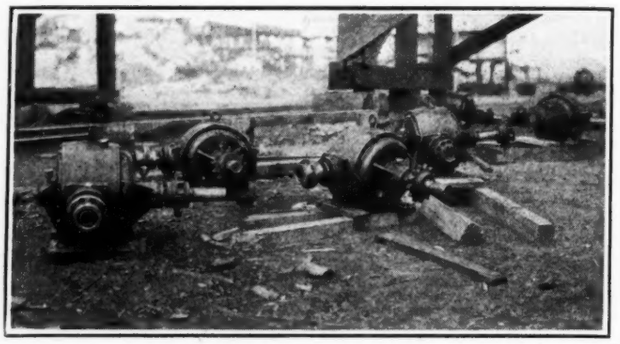
Dust is applied by machine as well as by hand casting. Sprinkling of working faces is consistently practiced. Each entry is provided with a 1¼-in. water main and ¾-in. branches lead to rooms or operating units. Loaded cars are drenched by a top spray, one of which is placed in each entry close to the slope. Stoppings are constructed of a rubble wall, backfilled. The outer surface is gunited, making an effective seal. Present practice makes use of hollow tile.

Overcasts are of concrete construction. No explosion



Storeroom at No. 10 Mine

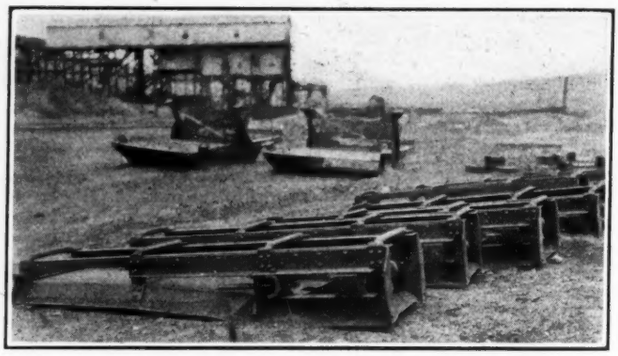
This is the central warehouse serving all this company's operations. At the modern mine not only must well equipped shops be maintained but an ample supply of spare parts as well.



Speed Reducers for Conveyors

These are right-angle drives. By this means the shaft of the driving motor parallels the chain of the conveyor. The machine thus occupies the minimum distance at right angles to the face. The motor, also, may be made of high speed and consequently comparatively light in weight and cheap in cost.

doors are used. Air measurements are made once a week and are embodied in a weekly report. Ventilation is checked up by the engineer at intervals. Regulators consist of a brick or tile stopping in which is a 4x4-ft. iron plate sliding between short sections of rail cemented



Tail Sections of the Chain Conveyors

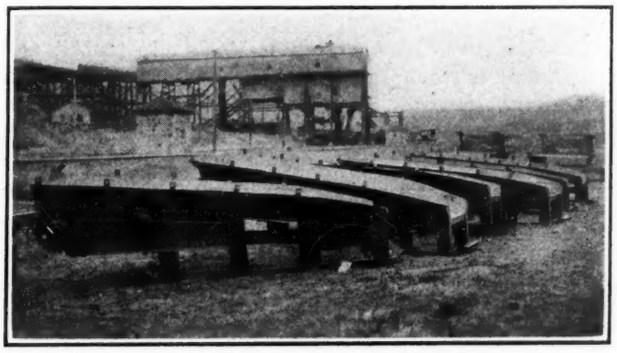
As here shown these are bottom up. It will be noted that the height of this section decreases from the rear end forward. The overall height of the conveyor is thus much less in the center than at the tail end.

at top and bottom of the opening in the stopping. Adjustment of the gate is made in accordance with anemometer readings, thus assuring accuracy of regulation.

Permissible explosives are used for blasting both rock and coal. Twist steel 1¾ in. in diameter with 2½-in. starting bit is used for drilling. Cartridges are 1½ in. in diameter. Instantaneous and delay electric blasting caps fired by batteries (10-shot blasting machine) are used in all work. All shots are tamped with adobe cartridges and filled to the collar. Except in certain classes of development work all firing is done by a special crew after the miners have left the workings at 4 p.m. Explosives are brought into the mine at night in an insulated wooden car and placed in locked boxes at convenient points. They are distributed the next morning by powder men to the respective loading units. Detonators are stored at points several hundred feet away from the explosives storage boxes. They are distributed by special men, and are checked by card to each individual. When stored in a room they are placed not less than 15 ft. away from any explosive. Each miner is given powder sufficient for only one shift's work. Explosives in quantity are stored in a magazine ¼ mile away from the nearest buildings and are delivered

to the mine by a special truck as required. Detonators are stored in a separate magazine.

Two types of underground circuits are used—alternating current at 2,300 volts for pumps, hoists, motor-generators and ventilating fan and direct current at 250 volts for motor haulage, undercutting machines, drills, conveyors, car hauls and auxiliary ventilating fans. Alternating current is 3 phase, 60 cycles. It is delivered through cables installed in cased bore holes ranging from 4 to 6 in. in diameter. The top of the hole is provided with a pot head or condulet placed at a sufficient height to obviate the necessity of fencing. Rubber-insulated, lead-covered cables with wire armor are used for vertical suspension in wet drill holes. Rubber-insulated cable with rubber belt over the three



Discharge Section of Chain Conveyors

Here again the height of the conveyor changes so that delivery can be made to another machine. Note that this section is provided with a sole plate to facilitate moving it from place to place.

conductors and outer wire armor is used in dry drill holes.

In dry parts of the mine three-conductor cable covered with rubber belt and double steel tape armor is installed and suspended by cable rings from a ⅜-in. galvanized cable such as is used in telephone suspension. This type of installation has given good service. Particular attention is paid to the grounding of the metal sheath on all cables. Where pipe lines, track or other good grounding mediums are unavailable, artificial grounds are installed. Rubber-clad portable cable is used on mining machines. The frame of the machine is grounded to the grounded side of the supply line. Most of the coal cutting machines are operated on 250 volts direct current, only a few being operated on 220 volts, alternating current.

In the company's mines four fans are driven by steam and 13 by motors. All electric fans are equipped with auto starters and open-phase relays to prevent single-phase operation. Motor and fan bearings are protected with temperature relays which stop the machine if a bearing runs hot. Open-phase relays are disadvantageous in that the motor will often operate on short circuits near the fan and it is planned to overcome this contingency by the use of time-limit relays.

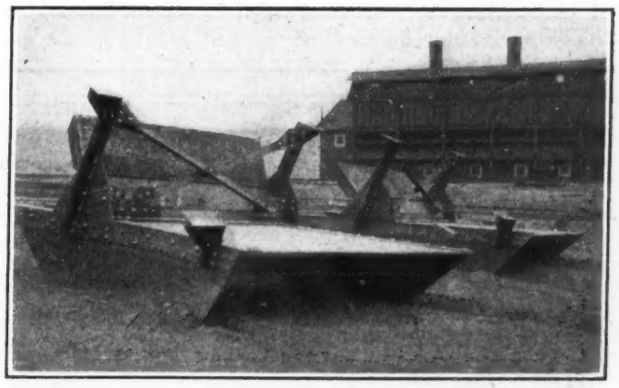
Most of the pumps are operated by 2,300-volt alternating current motors; some on 220 volts, alternating current, while small gathering pumps run on 250-volt, direct current. No automatic features are used on pump motors, and all are hand manipulated.

Motor-generator sets are placed close to work centers and are of both the synchronous and induction types. Several 150-kw. sets of both varieties are in service. Few transformers are used underground but where installed they are placed in fireproof vaults.

Signal circuits consist of two bare wires supplied with 22-volt current from a sign-lighting transformer which receives energy at 220 volts. Other signal circuits are operated by dry batteries. Red incandescent lights are installed at all points on haulageways where there is less than 30-in. clearance and blue lights are placed at first aid stations. Telephones are usually on a multiple signal code. Type E, Edison storage battery cap lamps, of 6¼ candle power and weighing 5½ lb. each, are issued to the miners. A red tail light is used on all trips and a red light on the head end of slope trips. Both horses and locomotives are used in No. 8 mine for gathering service. Two sizes of car are in use, one of 3,100 lb. capacity and the other of 4,500 lb. Both are equipped with wooden bodies but the construction is tight and doors are avoided by the use of a revolving dump.

Closed lamps, rock dusting and sprinkling in conjunction with efficient ventilation are the general features which maintain safe operating conditions in this mine. These are well handled. It is of interest to note that ventilation practices at the different mines have been greatly improved. By sinking air shafts at suitable points mine resistance has been diminished and a better distribution of air is now made. Systematic blasting and timbering practices are a part of the safety program.

As in other coal mining districts the majority of serious accidents results from falls of rock and coal. The electrical accident record is low as is also that due to blasting. A safety campaign is part of the regular program. At every camp six sets of Gibbs oxygen apparatus and six all-service Burrell gas masks are maintained in proper working condition. At Reliance and Hanna underground fires occur, both by reason of spontaneous combustion and from old outcrop fires. The usual practice is to fight such fires and when this proves unsuccessful to seal the area affected. A limited water supply militates against the success of fire fighting. Teams of trained apparatus men are maintained at each camp. A field meet is held each year at which the company teams compete in first aid and rescue work.



Scraper Sole Plates

As here stored outside the mine these plates are upside down. It is planned to cut these parts into two sections to facilitate handling and re-erection. They can thus be much more readily moved when necessity may require.

Safety work is supported by a generous budget allowance.

Out of a production of 2,779,064 tons of coal in 1925, 1,509,433 tons was undercut by machines and 1,271,631 tons was mined without additional undercutting. The

company has a total of 84 undercutting machines. Goodman, Sullivan and Jeffrey machines are employed. Permissible explosives to the amount of 397,153 lb. were used in 1925, or at the rate of one pound of explosive to seven tons of coal. No black powder is employed.

At Hanna, three types of mechanical loaders are in use, the special No. 1 electrical mining shovel, the type 0 street-railroad electrical shovel and the 4 B.U. Joy machine. A 32-ft. bed is here mined by the room and pillar method. In first mining, rooms are driven 35 ft. wide and 8 ft. high and the coal is loaded out with Joy machines. Such rooms are worked to a length up to 1,000 ft. On second mining the remaining 18 ft. of coal is taken out. In this operation the coal pile is maintained 80 ft. or more in advance of the Thew electric shovels that do the loading out. Each room is equipped with single track fitted with necessary partings. Pillars are 60 ft. in width. No attempt is made to mine them because of the fire hazard.

Open Flame and Circulating Coal Dust Never Mingle Without Danger

The finer a combustible substance is comminuted the more surface it presents for oxidation, the faster, within limits, is its combustion. It is stated in *Power* in a recent editorial that if this combustible substance is fine enough and the atmosphere is permeated with it to the required degree of concentration, the rate of combustion becomes explosive.

Coal shares this property with other combustible substances and is no more dangerously explosive than the rest of them. Not only easily combustible organic materials but metallic dusts have added to the record of disastrous explosions.

In a recent address before the National Safety Council Congress, David J. Price, engineer of the Bureau of Chemistry, says that the Bureau has a record of 280 dust explosions in industrial plants, in 70 of which 459 persons were killed, and in 144 of which a property loss of $33,500,000 was incurred. Few of these seem to have been explosions of coal dust.

It is perhaps due to the intelligent study the results of which have been disseminated by the Bureau that the extensive development of the last decade in the use of pulverized coal has been effected with no serious and no considerable number of minor casualties of this kind. A mass of powdered coal could no more be exploded in its naturally compact condition than could a barrel of flour. A lighted match could be thrown with impunity into either. There is no such condition as there is in gunpowder, where the oxygen necessary for combustion is compounded with the other ingredients and needs only ignition to complete chemically the union.

ONLY DIFFUSED DUST IS DANGEROUS

But if either the flour or the coal is sprayed or atomized or shaken around so that it forms a cloud in the air, an open flame or even a spark may flash it, and it would impress something like two billion foot-pounds of energy upon the surroundings in the instant required for burning.

Freedom from leakage and scattering in transit and cleanliness in the premises where it is used, so that no accumulation may be suddenly joggled or blown from a beam or rafter, and the precaution never to put an open flame into an inclosed space where dust has been circulating, are the simple preventive measures recommended.

Coal-Mine Royalties in Illinois

The results of a study of coal-mine royalties and leasing conditions in Macoupin, Sangamon, and Montgomery Counties, District VII, Illinois, are contained in Serial 2780, recently issued by the Bureau of Mines, Department of Commerce. This is the third of a series of reports on coal-mine royalties and leasing conditions in Illinois, results of like studies is Districts VI and VIII having been published some months ago. In the preparation of Serial 2780, the objectives were to obtain data which may be used in the preparation of coal-mining leases so that the most important factors in the lease governing the mining of coal may be set forth in unmistakable language and thus lessen the chances of litigation; and to provide a general knowledge of leasing royalties and values in this section of the State of Illinois. Copies of the report may be obtained from the Bureau of Mines, Department of Commerce, Washington, D. C.

Six-Ton Motor for Gathering

This type of locomotive can handle a great deal of coal with ease. It must be admitted that haulage is not a serious problem at Island Creek Coal Co. mines in Logan County, W. Va., because natural conditions favor the operations, but maximum service is obtained from every motor because they almost never break down. Rigid inspection spots trouble *before* it occurs. For safety's sake, lengths of old hose are split and used as trolley wire guards at all switches.

Trial of Scientific Management Shows Big Possibilities for Production Control*

Miner Is Not Isolated Unit—Production Should Be Controlled at Source —Other Departments Merely Support Coal Digger—Chart Makes Information Instantly Available for Action and a Matter of Record

By Jerome C. White
Assistant Editor, *Coal Age*, New York City

ON ACCOUNT of its almost universal acceptance and use by other industries, particularly automobile manufacture, and the big part it has played in their orderly and rapid development, scientific management must hold something of value to the coal mining industry. Believing that one way to find out what it offered in the way of possible solutions for operating and managerial problems, R. P. Maloney, vice-president and general manager of the Davis Coal & Coke Co., whose mines lie in West Virginia, Maryland and Pennsylvania, authorized an examination or study of scientific management. The complete investigation covered many of the various phases of this subject but the one chosen for the first installation was centralized production control.

The choice, I believe, was a wise one because it had for its purpose increased productive effectiveness and it intimately touched upon the work of those producing at "the face"; those whose departments supported the miner at the face, and finally the men in charge of production and costs.

To Mr. Maloney I owe my appreciation for his executive assistance; to J. M. Carmody, who was vice-president in charge of industrial relations, for help on the design of the chart and methods used; to the engineering and production departments, including the superintendents and mine foremen, for their co-operation and interest. Even to the men in the mines I owe some acknowledgment because no one opposed this apparently unseemly intrusion into the daily work that they had a right to think they had been doing well for years. The production control chart shown herewith was a test of centralized control in the application of scientific management to this company's operations. It was part of a searching test undertaken to ascertain if scientific management offered anything in the way of possible operating and management economies as applied to this

*Paper entitled "An Experiment in Scientific Management" to be presented before a joint meeting of the American Society of Mechanical Engineers and the Taylor Society in New York City, Thursday, Dec. 9, 1926.

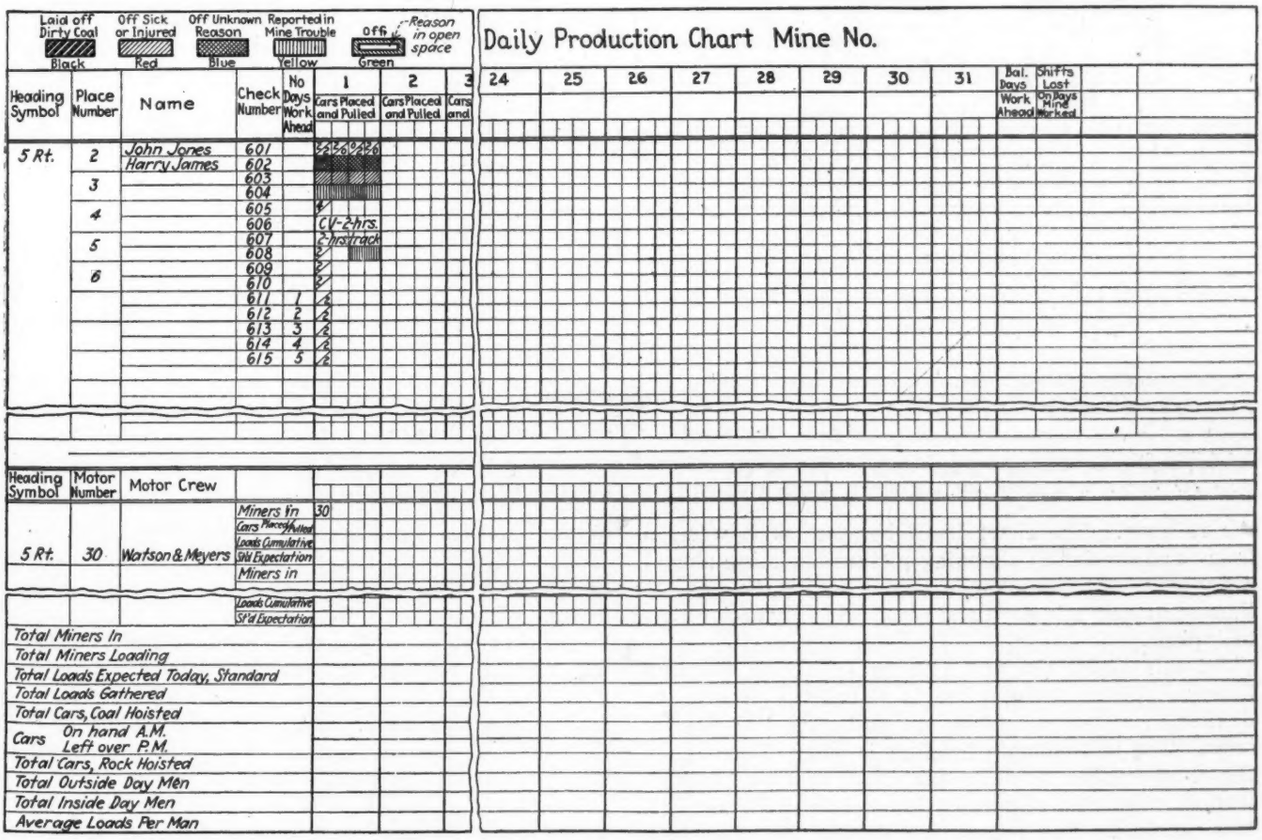


Fig. 1—Complete Control by Direct Contact

Control exercised by means of this chart is obtained by direct contact with production centers—straight-line methods. The official in charge of production has immediate contact with each of the supporting service organizations. As shown in Fig. 2 these exist only to support production. Adequate communication is afforded by telephone service.

particular company's operating problems. By its use the management was able to gain direct contact with and immediate control over every operating function that affected costs and production in each of the mines included in the test and eventually all of the mines in a division. By a previous arrangement a mine's operating costs were known in the general office before 9 a.m. of the day following. This method had already been in use before the chart was started, and fitted into the general plan of control.

By exact control over production I mean control over every producing unit that entered into the general production and management organization of the division. This control exercised by the general superintendent's office extended clear to the miner at the working face. The old idea that the miner at his work was an isolated character so far as control and supervision are concerned was dispelled. By means of this chart intimate contact was made with him, and his almost every action recorded. The man who handled this chart during a day's work became analogous to a train dispatcher on the railroad. The chart itself became, as it were, a living and constantly changing picture depicting almost every move that was made in a mine during the day. It thus accurately mirrored and recorded every action that took place.

On this chart, the first column is labeled Heading Symbol. Under this caption is placed the division or district of a mine served by one gathering unit and its crew. The next column heading is Place Number, or the room number in which the miner and his "buddy" worked. The next column is Name; this is divided into two sections. The reason for this is that two men worked in a room. Then follows the Check Number, under which heading goes the check numbers of the men working in this particular place.

The column following this is entitled Number Days Work Ahead. It was intended that as each room was started from a heading it would be given an estimated life in days. For instance, a room upon first starting would have an estimated life of fifty days; then for every day that this room worked its life would become less, e.g., the life ahead of a room would be successively 49, 48, 47 days and so on as each day worked decreased its prospective life.

The purpose of this was to co-ordinate the work of the production and engineering departments in order that adequate development could be planned for future operation, and that it would be so scheduled that production would be stabilized by balancing advancing and retreating work Also in order that as a miner finished one place he would know several days in advance where to go without losing any time. This source of information was intended to form the basis of a budget system, wherein production and expenditures would be scheduled a year ahead.

The next general sub-division of the chart is Days of the Month. Each day is divided into four parts. It was originally intended that the motormen serving this section should make reports at intervals of two hours. This idea of a 2-hr. interval was later made to fit the convenience of the motormen. When everything was running well the interval was seldom longer than 2 hr., but the time of reporting was made to suit their arrival at a side track. It so happened that their time of arrival at the parting suited exactly the period at which we originally wanted them to report.

At the top of the chart will be seen a set of symbols, which are as follows: black indicated a man laid off because of loading dirty coal, the length of the line indicating the number of days that he would be off, and when he could be expected back; red that the miner was

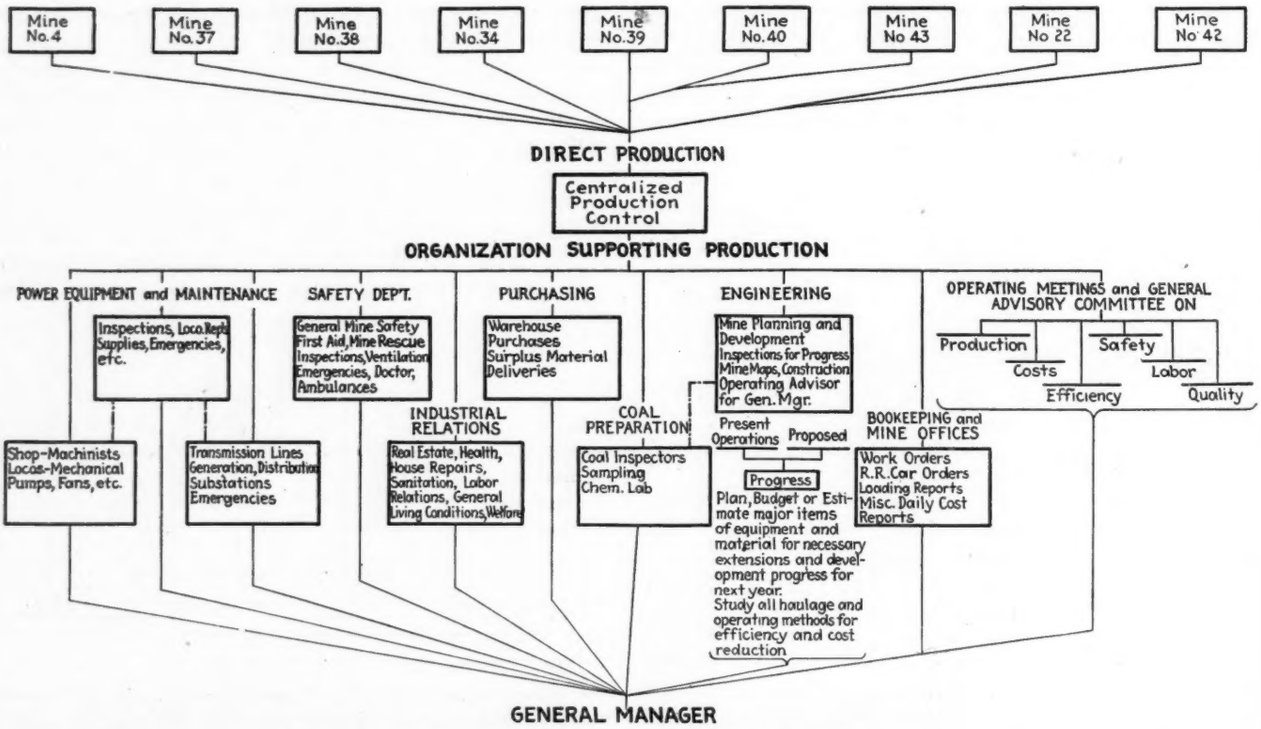


Fig. 2—Organized for Production and Results

By making the official in charge of centralized production control the one responsible for output and costs, all the other departments become in the nature of supporting units. Responsibility for any inadequate support given production by any of the service departments can be definitely located by the operation of the control chart.

off sick, or injured; blue that he was off for some unknown reason. When a miner reported at his place for work and the mine foreman or an assistant took him to substitute on some other job, such as braking, track laying or timbering, this was marked opposite his number in yellow. There were occasions when a man laid off for some reason that did not fall within this range of symbols, and when this occurred the reason for his absence was written opposite his name.

In the actual operation of this chart, after every one got used to doing his part, the officials at the general office knew before 9 a.m. the total number of men available for loading coal that day. They knew this long before the mine foreman. It was soon learned that there was a great distinction between the number of miners reported in and the number available for loading coal. This was information that was not heretofore available, because it had always been impracticable to secure.

STANDARDS WERE EASILY DETERMINED

This information was of valuable assistance in setting standards. By standards here is meant the expected production of a miner, a section, a gathering unit and, finally, the standard or expected production for a mine. As an example of how close it was possible to estimate the standard or expected production, after a little practice it was found that this could be judged within a few tons, on a production for a mine averaging from 900 to 1,100 tons per day. The same thing applied to the number of cars hoisted.

The mine foreman and superintendent were, of course, responsible for the day's output. They were expected to come up to the standard expectation for production. But what appealed to them most strongly was the fact that the standard was thorough, because it was based upon actual conditions; a mine was not charged the equivalent tonnage of a single man when that man was not available for loading coal.

After the chart had been in operation a week an allowance was made for miners who were loading rock. This information coming directly from the miner himself, the mine was charged only the actual number of cars that the miner would load that day. For instance, if the standard for one place was ten cars per day and this particular miner encountered a clay vein, then upon the report as to how long it would take him to handle this rock, allowance was made therefor. In other words, he was not charged for ten cars per day, but probably three or four, and oftentimes none. We never had to set a standard production, and then wonder why it was not reached. This occurs where, let us say, 100 men go into a mine, the average production per man being ten tons, we expect to receive 1,000 tons a day, but if only 900 tons are produced we are at a loss to know what happened. Asking the mine foreman elicits no specific information, except probably something that was obvious such as a wreck or a cave. However, when nothing extraordinary has occurred during the day, even he is at a loss to explain why the production was only 900 tons instead of 1,000. With the use of the chart we never had to ask, because we knew.

Another thing that appealed to the management during this work was the opportunity for increased production per man. Thus, the management figures that it costs a certain amount to keep a man at work. Every ton that a miner can, but does not load is a direct loss to the company. The chart pointed out a new field for increased production per man and guided movements toward greater efficiency. For instance, we were able to pick out all the low producers. This logically led to the question why is a man a low producer? It costs just as much in overhead to keep such a man in a place as it does to keep a high producer there. The output of the low man costs much more per ton than does that of the high man, and this is reflected in the ultimate or average cost per ton.

One common complaint of the miners everywhere, and this district was no exception, is that they are not allowed to make big earnings because they can not get cars. I can cite instances where stragglers have come out of the mines at noon, at one, two or three o'clock, and if asked why they left this early they would invariably reply that they could not get cars. It was known, however, that these men were low producers, but no records were available for disproving their statements.

We also have the problem of grievance committees taking up cases with the management growing out of poor car supply, and, what is worse, an unequal supply. The management then has to face charges of not only inefficiency, but also favoritism. The unfortunate part of such cases is that there are no records to refer to, and the only evidence that can be presented is the word of the miner and that of the mine foreman, with the result that the umpire deciding the case takes his choice. With the operation of the chart after a month was finished it was an easy matter to file it and there was never any "comeback," as the number of cars that were offered to a miner and the number of cars that he actually loaded, were recorded upon it.

The motorman on his first trip up the heading places, say, two cars. It is a custom that the motor crew examines every place in its heading each morning to see whether the men are at work, and what they are doing. In making this inspection we were not asking them to do any extra work, because they always did this for their own information.

WIDE FLEXIBILITY ATTAINED

Let me cite the motorman's first report in the morning. It will take a form somewhat as follows:

"Left sidetrack 7 a.m. with 30 empties. Check No. 601, placed 2 and pulled 2; Check No. 602, not in; Check No. 603, not in, sick; Check No. 604, not in, brakeman today; Check No. 605, placed 4 cars; Check No. 606, Clay vein 2 hr., no cars until noon; Check No. 607, track torn up by cutting machine, 2 hr.; Check No. 608, placed 2 cars. Miner got a short cut—will load out 1 o'clock; Check No. 609, placed 2 cars and pulled 2; Check No. 610, placed 2 cars. Arrived at side track 8:10 a.m. with 30 loads."

The report here given is, of course, an assumed one, but it shows the wide range of flexibility, and the number of varying conditions that can be covered by a few symbols, such as "2 hr. account of clay veins," and so on. The loaded trip reported would be made up of the cars loaded early in the morning and of those placed the night before, including loads left over from the previous evening. These reports were posted directly on the chart by the man receiving them from the motorman. He used a telephone that had the transmitter and receiver in a single unit, which left his other hand free to make such notations as were necessary. It was in-

tended later to provide him with a head set, such as is worn by telephone operators and train dispatchers. This would leave both of his hands free.

We now come to the haulage division of this chart. The first column is labelled Heading Symbol. Here is put the number of the entry or heading which a gathering locomotive serves. This agrees with the heading symbol used on the miner's division of the chart. The next is the motor number and the names of the crew. The space given to the motorman is divided as follows: Miners In; Loads Pulled; Loads Cumulative; Standard Expectation.

EACH MAN KNOWS WHAT IS EXPECTED

The division of the column under the date is the same as the miner's column; that is, it is divided into four equal sections. Each of these can either represent 2-hr. periods, or the trips handled during the day. This, however, can be arranged for the convenience of the one handling the chart. It will be noted all the way through that this chart is so flexible that it can be changed to suit conditions obtaining in one or any number of sections. Of course, uniformity is desirable, but so is convenience and efficiency.

The motorman within a few minutes after giving his first report to, let us call him the production manager, knows his standard expectation for the day. This standard is not based on the total number of miners in his section, but upon the men available for loading coal. One thing that the motormen liked in this connection was the fairness upon which this standard expectation was based. In other words, they were not charged for full tonnage of miners who were doing track work, rock work, or had bad roof to contend with. The man who handled this chart and received these reports from the motorman was experienced in the mines, and was familiar with all conditions. Another feature of this work was the fact that while a miner was doing rock work, no cars were to be delivered to him. The production manager knew if cars were placed for this man in the morning. If the motorman happened to leave cars in a man's place, and he was not able to load them, this was known and, of course, the cars were taken out and used elsewhere.

It has happened repeatedly that one section of a mine had an extraordinarily good day, having its full quota of miners in their places and all loading coal. Of course, at a time like this the demand for mine cars is unusually heavy. Now we can assume that probably in another section two or three men are on rock work, and a full quota of cars will not be needed. The production manager knowing this can allow the extra cars to go to the heading needing them most.

It should be noticed that no elaborate or particular attention is paid to main-line haulage locomotives. Control over this class of service is incidental, as the production manager is in constant communication with the gathering motormen, and the main haulage motormen get information as to the distribution of cars at any time it is needed. If anything unusual occurs the production manager can call the main-line motorman. For instance, if a trip of, say, 40 cars is en route for a certain heading, and the production manager finds there has been a wreck or other delay, he can have these cars switched over to another heading where they can be used more advantageously.

The production manager has a constant check over all the available haulage equipment. He knows at all times what locomotives are in the repair shop, and their exact status. As this man is primarily responsible for production, and is the central unit around which the production and service departments revolve, it is his duty to see that no haulage equipment is allowed to remain without needed repairs.

In regard to the simplicity of this chart, it should be noted that totals are cumulative, i.e., each motorman reports his total number of loads pulled, and that this is added to the previous number or the previous total reported. Thus the accumulated total at any time during the day is shown. This means that at the end of the day's run the only work required is the addition of the cumulative totals reported by each gathering unit in order to arrive at the total cars gathered during that day. This total is used to check the tipple report of the total number of cars hoisted, which is in turn checked with the total or standard expectation for the day that was set at approximately 9 o'clock in the morning. As this estimated total is based upon the men actually available for loading coal, it is recorded when a man stops this work during the day. This solves the old question of how long does a miner work. To the miner who is really interested in his work and in loading as much coal as he can to increase his earnings, such a record and such a production control assures all the cars he can load. All the delays and various inefficiencies that occur during a day's run, that hitherto have been buried and unsuspected, are brought to light.

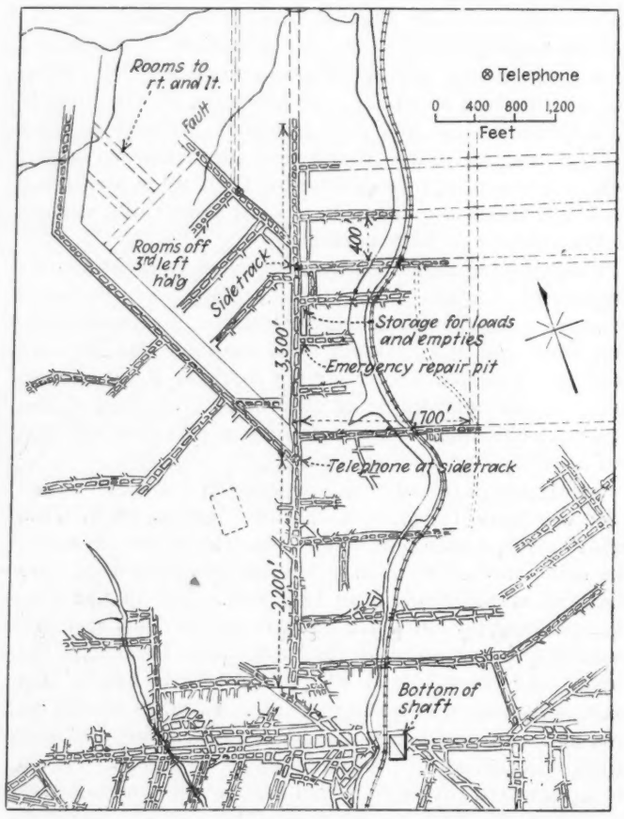


Fig. 3—Telephones Shatter the Barriers of Distance

A large number of miners can be taken care of on the production-control chart because only motormen serving them report; thus we have the miners as the primary producing units together with the motor crews, upon whom their production immediately depends, under control. Approximately 130 men work in the section shown.

This is not only a check on labor, but it is also a check on management.

We now come to the subdivision that sums up the whole day's operation. This is divided as follows: Total Number of Miners In; this is the number of men classified as miners who have reported for work in the morning. The next total is Miners Loading. There is a vast difference between the number of miners who have reported for work and the number who are actually loading coal. Heretofore the information used was the total number of miners who reported for work. This, of course, was the information that the mine foreman had, and he seldom knew the number of men who were withdrawn by the various section foremen to do track work, or to substitute for any of the other day labor.

Aside from these demands upon the mine's tonnage men, there were other production-loss factors, such as clay veins, bad track, short cuts by the mining machine, small and large falls of roof, as well as the men who just took a notion to go home at any time during the day. Every one of these happenings were reported to the production manager almost as they occurred.

Standards Are Based On Capacity

The next under this general subdivision is Total Loads Expected Today—Standard. This is the beginning of setting standards based upon capacity because as previously explained, they were based upon actual conditions. This was one phase of the chart that the mine foremen themselves appreciated. Heretofore when the general office used the total number of miners reported in as a standard upon which to base an expected production, the mine foreman was put "up against it" to explain why his output did not equal the tonnage per man times the total number of miners reported in.

The next column is headed Average Loads Per Man. The production manager used this column to set his standards, and once having run these over a period of time it gave him a close figure upon which to work. The next heading is, Total Inside Day Men. This is the total number of day laborers reporting for work. The next is, Total Outside Day Men, and after that, Total Cars Coal Hoisted; this column being sub-divided into Cars on Hand A.M.; Cars Left Over P.M.; and then following this comes, Total Cars of Rock Hoisted.

It was intended that this chart should be the pivot around which would revolve the entire operating, management and service organizations of the company; in other words, the regular weekly conference would be held around this chart, the conference being in the nature of the general manager checking up on the operations of his staff, lending them his assistance, and pointing out to them the moves that would be of the greatest value to them. The every action of the entire organization was, as it were, photographed, and the general manager was thus enabled to analyze conditions concisely. It might be stated that such a chart was self-analyzing. As one chart was made to cover an entire month's operations, in checking over and analyzing any part of a current month there were no sheaves of papers to handle, or masses of confusing figures. Everything stood out by itself.

The use of vari-colored pencils made each of the sources of production loss stand out prominently, and I might say, speak for themselves. For instance, the number of men laid off for dirty coal was shown. The number of men losing time on account of sickness or injuries was indicated by red lines. Then there were the blue lines running across the page to signify men remaining away for reasons that were within their own control; and the yellow spaces, indicating production losses due to management. It certainly was the aim of the officials to keep down the yellow marks on this chart all they possibly could, because time lost by the miner, not directly his own fault, was charged to the management. For example, if a miner lost several hours on account of no track, a short cut, or other delays, the production manager marked this in yellow opposite that miner's name.

A distinction is here made between a good or fair standard and an average. Where there is a combination of low producers the result is an average. The high man helps to put the average up, and the low man pulls it down. Standards were not based upon averages. If a good miner could load ten cars per day, and it was decided that this man was an exception, then the expected standard for another man who was employed should be about six cars per day or what he was physically able to load. All those who loaded less than six cars per day were considered sub-normal miners. They may have been old men, or had places in which they could not load this tonnage, or they may have been just plain lazy, indifferent or inefficient. However, the willing but inefficient man can be helped. It was shown to the mine management that everything they could do to bring up the production per man should be adopted because this means dollars and cents to the men and to the company. By means of this chart the officials were in a position to bring up the tonnage of the low man.

Accident Record Proved Valuable

A byproduct of this chart was an accident record that was well worth while. Coupled to and shown in direct connection with the entire day's operation are the red marks. They show in relation to operations, as no other method of report can, the cost of idleness due to sickness and injuries. This marking was a safety lesson to the officials, because it brought home to them the cost of accidents in terms of production.

Now, a word as to the practical or the mechanical side of this chart, the ultimate purpose of which is centralized production control. It was the intention that production and all departments upon which it depends should be under the direct supervision and control of a central production executive. This central production executive, as I have here called him, may be either a manager or an engineer. What his title may be does not matter. I shall not attempt to lay out any qualifications as to the man who could handle this job to best advantage. The fundamental characteristics that he must possess, however, are two: he must be an organizer, and he must have production sense. This is a high-caliber job. It could be either given to an engineer who had developed his executive and production abilities, or to a former mine foreman or superintendent who had shown an aptitude for organization. It is distinctly an executive's job, requiring quick and accurate thinking; it is by no means a clerk's work. The man who holds this position is always in direct contact with the mine foreman and the motormen, and he must by his ability be able to hold the respect of these men, who are directly under his instruction and orders.

Now as to this man's relations toward the mine foreman. The mine foreman must realize that in this day

of specialized departments he is to become more and more of an organizer. The more a mine foreman becomes a good organizer, rather than a technician, the more he becomes a leader and the less a boss; the better he fits himself into these new conditions, the more valuable he becomes in this new organization. Under centralized control he will have a definite place, because such organization tends only to make his work more effective, not to displace him.

The ultimate object of the experiment was the complete reorganization of management along scientific lines. By the use of this production-control chart the organization structure at all of the mines except one would be rearranged. The mine foreman at each individual operation would remain in the same position but it would be necessary to raise the requirements. In any event it will demand some training to accomplish this result. These men are to be trained along the lines of business practices, organization, and management principles, rather than the prevailing idea of technical instruction covering formulas of ventilation, and the like. It would be understood that in taking these men they had early prepared themselves in the legal and technical requirements of their positions before they were employed and the company would then undertake to train them in business and modern industrial management, giving out no more management ideas than they were able to absorb and accept by their own reasoning. It devolved upon the management to "sell" the new idea to them, not to force it upon them.

HASTE MUST BE MADE SLOWLY

In preparing the ground for the successful future of scientific management a Foreman's Training Course was designed. It was not expected that scientific management in its entirety could be "put over" in a few months or a year. The study of men in this problem is as important as the study of operations. By proper training and by properly preparing the way, operating officials will come to look upon scientific management, not as any passing fad of the times, but merely as good business. Names or titles mean nothing—results alone count. Scientific management offers immense possibilities for operating and managerial economies by increasing production effectiveness in the coal-mining industry. Its progress will here be more rapid if those individuals and organizations interested in management in the more efficient industries will help by encouragement and interest. If the coal industry will investigate and examine into its basic fundamentals, rather than be awed by its apparently complicated operating structure and mechanical methods, it will find that scientific management offers a solution to many coal problems. I believe that one of the big reasons why scientific management, or the Taylor system, has failed to make progress in coal mining is that heretofore the details have been mistaken for the principles. Mr. Taylor himself, warned against this. As I see it, the whole purpose of scientific management is to co-ordinate the efforts of management and labor for more effective production. In the end this means greater prosperity for both the employees and the employer.

This industry cannot lift and transplant ideas, methods or forms from any other highly efficient industry and make them successful as scientific management. But if it will examine and investigate the reasons for the existence of the many details encountered it will devise effective methods to suit the industry's own peculiar conditions, breaking down the barrier of relatively great distances separating comparatively isolated producing units, regardless of whether these are miners or loading machines.

The coal industry is ripe for the introduction of scientific management, particularly in those districts where mechanical loading is making rapid progress. J. B. Pauley, president of the J. K. Dering Coal Co., stated at a recent session of the Illinois Mining Institute that we (meaning operators of the Middle West) should no longer rest upon our laurels as the most efficient coal producers of the world, but should set our standards of efficiency to parallel those of the more efficient industries. At the same meeting Dr. L. E. Young, general manager of the Union Collieries Co., whose Kathleen mine in Illinois is completely mechanized, said that heretofore tradition has dominated our policies and methods to a greater extent than has been good for the industry.

The nearer a coal mine approaches complete mechanization, the nearer it approaches factory conditions. Centralized production control is just as applicable to that part of the industry which employs hand labor for mining and loading coal as it is to the mechanized operation. The industry needs scientific management, and, if I may judge by the statements of Mr. Pauley, Dr. Young and from my association with Mr. Maloney, all of whom are executives of large coal-mining corporations, it not only needs it but wants it; not merely its mechanics and details but its ideals and philosophy. Recognize the principle and the details will take care of themselves.

Studies of California's Gas Problems Indicate Replacement of Oil by Coal

A recent report of investigations by the U. S. Bureau of Mines (Serial No. 2769) covering a study of certain gas-making and fuel problems peculiar to the gas industry of California, reveals many features that are of interest to the producers of coal.

Gas manufacture, as a California industry, is largely centered in two districts, San Francisco and Los Angeles. From these, the gas is distributed through mains over a large area. Practically all of the gas at present manufactured in the San Francisco district is derived from oil. In the southern part of California where natural gas is available, the supply is largely a mixture of natural and "reformed" gas—natural gas that has been "cracked" in retorts at high temperatures. But where the natural gas supply is inadequate, oil gas is the chief product. The continued use of the oil-gas process to the exclusion of all others depends upon an ample supply of petroleum at a low cost. Since the prospects of obtaining such low-priced oil in the future is somewhat uncertain, a study was made of the availability and practicability of various fuels for gas-production purposes.

It is believed that the supply of natural gas in the Los Angeles district is sufficient to satisfy the domestic demand for some years. But it is probable that a large part of the natural gas now used for industrial purposes will be replaced by coal, either as such or in the form of coal or water gas, as the domestic demand for the natural product increases and its price rises above the cost of fuel from other sources. As the supply of natural gas decreases, it will probably be used only to enrich water gas.

In the San Francisco district the oil-gas process continues in use because of the availability of a cheap raw material, and the absence of a readily available supply of high-grade coal at a satisfactorily low price. Indications are that oil will be used for gas manufacture for a number of years, but it is evident that oil derived from shale cannot be supplied to the gas plants of northern California at such a figure as to maintain the exclusive dominence of the oil-gas process. Nor can it be expected that oil from the present sources will long be sold at such low prices as now prevail.

Another interesting consideration is that in making "550 B.t.u." city gas the requirements of the oil-gas and the carbureted water-gas processes are, respectively, about 8 and 3.3 gal. of oil per 1,000 cu.ft. of gas manufactured. In view of present indications, this fact alone should cause gas companies to give careful consideration, if not actual preference, to the carbureted water-gas process in future installations.

An appreciable proportion of the oil available in California is high in sulphur as is much of the shale oil. Unless a cheap process is discovered for removing this sulphur it will be necessary, in order to use this oil successfully, to provide some means of purifying the resulting gas, as otherwise it will contain a noticeable amount of hydrogen sulphide and organic sulphur. Whether the present process of liquid purification can be adapted to purify gas, or a modified method developed, must be determined. The solution of this problem of purification will simultaneously render available for gas-making purposes the highest grade coal found in California, namely that of Monterey County, which contains too much sulphur for this use at present.

Imported Coal Can Compete

Indications are that in the immediate future high-grade coal, available by importation from neighboring states or other sources, will be on a competitive basis with oil. Future developments of the gas industry in California will then be along different lines for coal will be the basic raw material. With this in mind, a survey of the coal situation was made and the following conclusions drawn:

The coals of California are not well adapted to the gas-making processes now commonly in use. The best coal is found in Monterey County but its sulphur content will be prohibitively high until new processes of gas or coal purification are developed. This coal can, undoubtedly, be used for coking when mixed with other fuels. The other California coals are sub-bituminous to lignitic and are not only non-coking but, in many instances, slack upon exposure to the air and are subject to spontaneous ignition. They usually have high percentages of sulphur, moisture and ash, and yield a poor quality of both gas and char upon carbonization.

California coal beds are folded and faulted to a degree materially affecting mining, and this naturally tends to make production costs abnormally high.

Tests indicate that the sulphur and ash content of California coals cannot be materially reduced by washing.

Coal of good quality, suitable for the manufacture of either coal or water gas, can be obtained from Australia, Utah and probably from the East at competitive prices.

Lump coal is not available from the State of Washington. On account of folding, faulting and the broken condition of the beds, as well as the friability of these coals, an excessive amount of fines are produced in mining and lump is, therefore, at a premium. In general, the best coals of Washington are high in ash and are not so well adapted for making coal gas as are those from Utah and elsewhere. There are, however, coking coals in Washington and British Columbia (Vancouver Island) which can be successfully used in the manufacture of coal gas.

Coal from Alaska is not now available at a price sufficiently low to be of interest and probably will not be for many years.

Eastern coals will probably be available in California at a reasonable price because the shipments of lumber to Eastern ports are much greater in volume than the return cargoes and a full return load is desirable. In other words, the boats carrying lumber from California to the East can economically transport return shipments of coal at a rate that will interest gas makers.

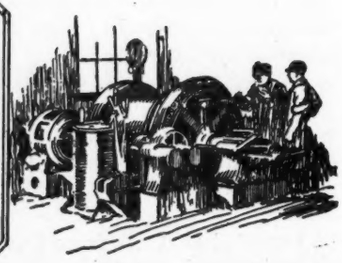
Coal Is Less Flexible Than Oil

Because of the large fluctuations, both seasonal and otherwise, in the daily demand for gas only a small percentage of the total now made can be coal gas. This is due to the fact that coal-gas generating equipment is not so "flexible," in the production of gas having a high calorific value, as are either the oil or carbureted water-gas generators. Furthermore, there is at present apparently no appreciable demand for coke in California, particularly in the southern portion. Coke is too expensive for use as a water-gas generator fuel in competition with coal. This condition will obtain until the coal gas becomes so valuable for enriching purposes that coke can be made at an unusually low cost. A small quantity of coke can be used to advantage in making water gas when bituminous coal is the chief fuel.

The report concludes with the following recommendations, to meet future conditions, for the development of the gas industry of California: Manufacture combined oil and carbureted water gas, replacing oil gas with coal-gas equipment as the price of oil advances. Eventually make mixed coal and water gas, carbureting the latter only to such an extent as will be justified by the relative prices of oil and coal and by the marketability of the coke. The seasonal "peak load" could be taken care of by making oil gas, utilizing the present equipment for that purpose. In this manner, the oil-gas equipment need not be prematurely scrapped.

TESTS OF THE FUSIBILITY of coal ash and the relation of such tests to the clinkering characteristics of the coal are being conducted at the Pittsburgh Experiment Station of the Bureau of Mines, Department of Commerce. Although laboratory methods for determining fusibility of ash have been carefully investigated by the Bureau and standardized, no comprehensive study has hitherto been made as to how accurately such laboratory tests predict clinker trouble in burning coal. Seven different coals having a wide range of ash fusibility were tested for this property by the standard method worked out by the Bureau, and two other well-known methods. The coals were studied as to the distribution and composition of the ash-forming constituents, the sulphur content, and fusibility of ash. Firing tests were made on the same coals in a special hand-fired furnace developed by the Bureau engineers. The results of the fusibility tests were generally found to be indicative of the clinkering trouble that was experienced in burning the coals. The work is being continued on other coals.

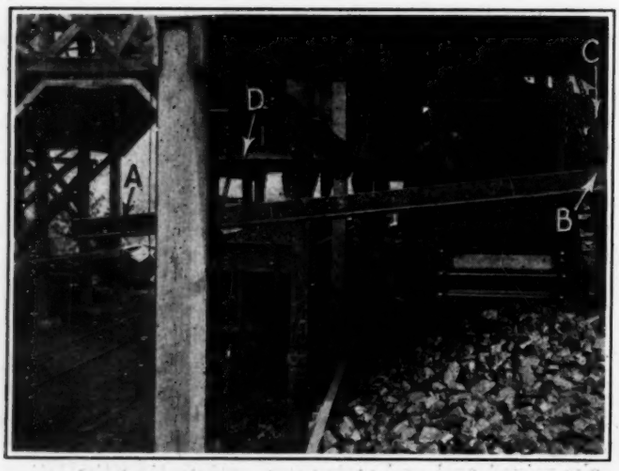
Practical Pointers For Electrical And Mechanical Men



House Coal Is Loaded by Simple Method

Many tipples have been built without provision for loading house coal, presumably to save the initial cost of a conveyor and bin rather than because this feature was forgotten. Where no equipment is provided it is not uncommon to see the house coal thrown to the ground from a railroad car and then shoveled into a truck or wagon.

An inexpensive and very practical method of handling



Showing Loading Chute in Off-Duty Position

When house coal is to be handled, the wagon or truck is backed under *"A"*, the loading boom raised and the chute *"A-B"* adjusted by lowering *"A"* and sliding *"B"* sideways so as to catch the coal as it comes from the boom. The splint coal shown in this photograph is shipped from northeastern Kentucky to many points in the northwest.

house coal, where no provision was made for so doing in the original tipple, is that being used by the High Splint Coal Co., High Splint, Ky. This arrangement can best be described by reference to the accompanying photograph.

The equipment consists of an 18-in. x 14-ft. chute, *"A-B,"* and its supports. It is here shown in the off-duty position. When a wagon is to be loaded with house coal, the end *"A"* of the chute, which is counterweighted from the bail *"D"*, is pulled down to a wagon, and the end *"B"* is pushed sidewise under the end of the loading boom after the latter has been raised to the necessary height. No further labor is then required in loading a wagon.

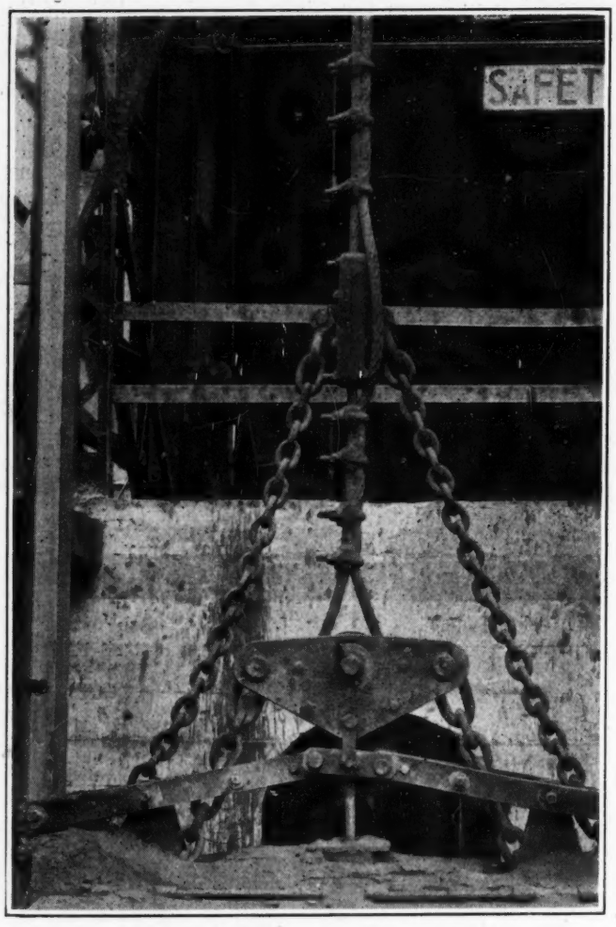
The end *"B"* of the chute is moved into position by sliding lengthwise a rail which forms a cantilever support to which the chain *"C"* is attached. The supported end of the rail is held in stirrups on the tipple floor.

The photograph shows three slate pickers, two on the boom and one on the car. These men are given a rest, however, when house coal is being loaded. The reason for not picking coal hauled to employees is to impress upon them the necessity for loading a cleaner product in the mine. If a miner loads a dirty car he may get unpicked house coal from that very car. The practice no doubt helps materially to keep the urge for cleaner coal before the employees.

Clamping Is Displacing Rope Socketing

For many years the standard method of attaching wire ropes to skips, cages, and the like, has been by means of a zinc-filled socket. There is no question as to the efficiency of such an attachment if properly made. It has the objection, however, that the actual point of attachment is concealed and cannot be properly inspected as to workmanship.

Instances of ropes breaking close to the socket or just inside it have demonstrated that for maximum safety a few feet of the rope should be cut off and the end resocketed at frequent intervals. But this socket-

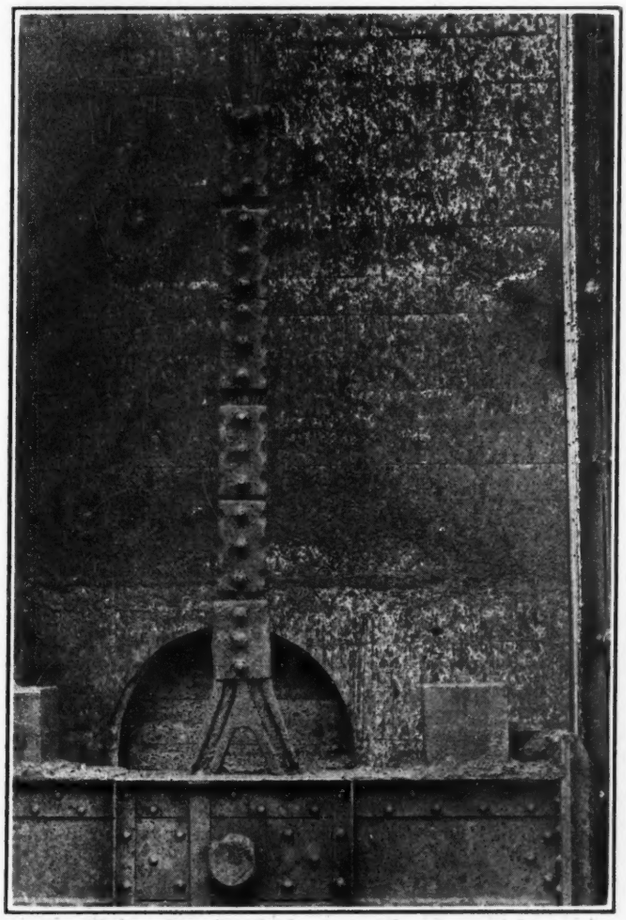


Rope Fastening at Auxiliary Shaft

The 1⅛-in. rope is looped around a solid sheave 12 in. in diameter, and the end secured by standard Crosby rope clamps. The advantages of this type of hitching are simplicity and accessibility for inspection.

ing is a slow and important undertaking, and the oftener it is done the greater will be the chance of an accident because of a poor job. For this reason the usual tendency is to neglect both cutting off and re-socketing.

Because of these difficulties the clamp method of attaching wire ropes is now finding increased favor. Two outstanding examples of such attachments, in use at



Hitching of Ropes at Skip Shaft

The rope, which is of 2-in. diameter, passes around a special thimble that has the hole offset to bring the pull straight above the pin. Three clamps would probably be more than ample. The extra three are really spares.

the New Orient mine, are shown in the accompanying illustrations.

The 1⅛-in. ropes of the auxiliary shaft are attached to the cages—which handle men as well as inspection coal and material—by being looped around a 12-in. solid sheave and the end fastened to the active strand by seven Crosby clamps.

At the main shaft a slightly different method is employed. The 2-in. ropes are looped around special thimbles rather than sheaves, and special cast-iron clamps are used instead of the standard Crosby clamps. The thimble, which was supplied by the manufacturer of the wire rope, has the pin offset slightly from center so that it is directly in line with the active strand of the rope.

A distinct advantage of clamping is that there is practically no chance of accident due to faulty workmanship in assembling. If it is desired to cut off a short piece of the rope, the re-attaching can be done in a comparatively short time. The psychological effect of being able to see the fastening is another advantage.

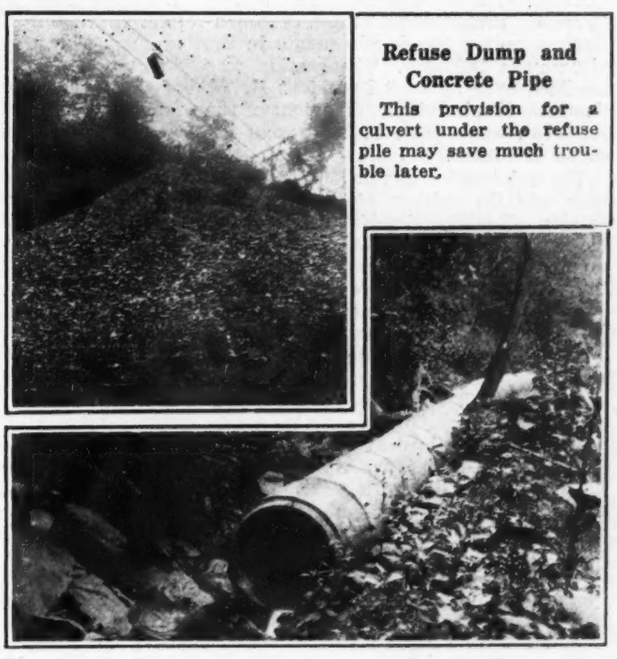
More evidence of the growing preference for this method of attaching cables is the report that the Island Creek Coal Co., of West Virginia, will use the special thimble-and-clamp method at the new large-capacity shaft mine which is under development.

Culvert Laid Ahead of Refuse Pile Reduces Chance of Slide

In the past, slides in refuse dumps have been the cause of great expense, much property damage, and some loss of life. Where refuse is dumped in a hollow which is the drain for an appreciable watershed in hilly or mountainous country, trouble can be expected unless some provision is made to take care of the water.

An example of forethought in this regard is shown in the accompanying illustrations made at the Dehue mine of the Youngstown Sheet & Tube Co., in Logan County, West Virginia. During the past year an aërial tramway was installed to carry refuse from the No. 1 shaft tipple to a hollow which drains to the creek in the town.

Before the refuse pile had reached the low point in the hollow, several hundred feet of reinforced concrete pipe 36 in. in diameter was laid in the ditch. This will form a culvert under the dump so that there will be no damming of the water nor percolation through the bottom of the pile. This will practically eliminate all possibility of a slide.



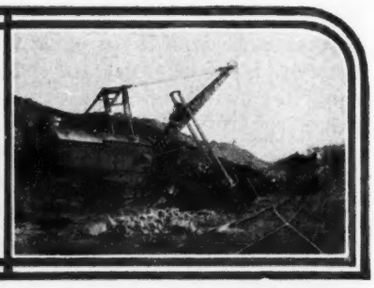
Refuse Dump and Concrete Pipe

This provision for a culvert under the refuse pile may save much trouble later.

THE WINTER before last was very severe and the plant was forced to shut down for about forty days, says Frank T. Ward in *Power*. We manufacture our own electrical power and naturally had to watch piping, pumps and other water-bearing apparatus rather closely in freezing weather.

The winter was unusual, but we tried to keep ready to run any day and therefore did not open and drain everything. In order to be safe, I tried a plan that may be well known, but which I never personally observed before. Taking a tip from my automobile, I poured a small quantity of alcohol into the steam-pump heads and in similar places where an accumulation of moisture might occur. Nothing froze.

News Of the Industry



Economic Problems of Coal Industry Featured at Opening-Day Sessions Of the American Mining Congress

By Sydney A. Hale
Associate Editor, *Coal Age*

Washington, D. C., Dec. 7.—Consideration of the major economic problems of the coal industry featured the opening session of the twenty-ninth annual convention of the American Mining Congress at the Mayflower Hotel today. E. W. Parker, director, Anthracite Bureau of Information, outlined the situation in the hard-coal trade. Allan H. Willetts, director of the bureau of coal economics of the National Coal Association, appeared for Walter Barnum, president of that organization, to review the developments in the bituminous industry. The session was presided over by Past President H. W. Seaman. Hugh Shirkie, president of the congress, was unable to be present because of illness.

The relation of government to business was the subject of the afternoon session. Business itself was responsible for most of the invasion of government into industry, according to Secretary of Commerce Hoover. Nobody, he said, seriously advocated more centralization of government as a theory.

Demands for specific intervention generally arose from one of three causes: (1) The failure or unwillingness of the states to exercise their own powers. (2) Failure of some states to exercise such powers where other states had done so, thus putting the latter at an economic disadvantage. As an illustration of this he cited the campaign for a national child labor law, which he said was due to the fact that about half the states had refused to follow the lead of the rest in enacting proper legislation on the subject.

It was the Secretary's opinion, however, that the greatest expansion in centralized government activities was due to the failure of business to settle its own affairs on a satisfactory and just basis. The Sherman Anti-Trust Law and the Interstate Commerce Act were the result of abuses which business itself had failed to correct.

Practically all the pressure put upon Washington for more government in business comes from some segment of the business world. Business needs a certain amount of education. Unless it is prepared to co-operate and to fight out its battles within its own ranks, the pressure for further government regulation inevitably must continue.

Mr. Hoover also criticized loose internal organization at Washington, with duplication of contact with business and expressed concern over the breaking down of the divisions between the executive, legislative and judicial authorities contemplated in the establishment of the Republic and the overlapping of functions.

The anthracite industry, once an important factor in industrial coal consumption, now plays only a negligible part in fueling the power plants, gas ovens and blast furnaces of the country, said Dr. Parker. It has been driven out of the furnace and is fact disappearing from other industrial enterprises. Contemporaneously with this development, however, is the increasing percentage of small sizes produced. In 1890 pea and smaller sizes constituted only 23 per cent of the total output; last year domestic sizes, including pea, constituted over 71 per cent of the output.

The smaller sizes, he explained, are sold at a dead loss. As a result there is a deficit of $75,000,000 annually in the sale of these sizes which must be borne by the domestic trade. Anthracite operators are trying to secure a more remunerative market for the small sizes as the only means open to hold domestic prices in check and possibly effect a reduction.

One disquieting feature in the situation is the growing restriction of the market for the sale of anthracite. Business to the Northwest has been cut in half, when comparison is made with pre-war figures; exports to Canada have been declining because of the competition with Welsh and Scotch fuels. The only saving note is the growth of population in the territory now left to anthracite.

There can be no general labor interference with production for the next four years, continued the speaker. The industry is rapidly recovering from the effects of the last strike. The more distant markets have been well taken care of and nearby communities bought so liberally during the spring and summer that December promises to be the dullest month of the year in anthracite sales. Oil competition, Dr. Parker believed, will grow less menacing.

The efficient manner in which the bituminous industry had met the emergencies created by the anthracite strike in this country last winter and the world shortage resulting from the British suspension was the principal theme of the Barnum paper read by Dr. Willetts. The soft-coal mines readily made up the deficit produced by the hard-coal strike.

Hugh Shirkie
President, American Mining Congress

"Moreover, the industry met this purely domestic crisis with an unimportant advance in mine prices, amounting the country over to an average increase of only 12c. a ton even for spot purchases, as reported on the impartial authority of *Coal Age*."

The only limiting factor on increasing exports during the British strike was the pier capacity of the North Atlantic ports. The bituminous industry had met home and foreign demands by speeding up production to a maximum weekly output equivalent at its peak to an annual output of 740,000,000 tons. Foreign demand reached its greatest expansion at the time when many American consumers normally entered the market. Yet there was no shortage at home; no suffering. The conjunction of these two demands created some unjustifiable apprehension on the part of American consumers, and prices for a time were carried beyond previous levels. "While the rise in price," commented Dr. Willetts, "was due more to the fear of a domestic shortage than to a shortage actually existing, it is worth noting that such a rise, whether well founded or not, brings its own remedy in the form of increased supply, and what the country needs in time of actual or anticipated shortage is more coal, even at some

Industrial Coal Stocks Continue to Grow

Consumption of coal in October strengthens the belief that the wheels of industry show no diminishing pace. The total consumption of 41,115,000 tons by industries, as reported by the National Association of Purchasing Agents, registers a further increase over the preceding month. A percentage of this increase may be attributed to the added burden on power plants caused by the seasonal resumption of heating and lighting requirements. A daily average of 1,326,000 tons was consumed in all industries.

The survey of the association shows that stocks have been built up slightly; the total on hand Nov. 1 was 45,535,000 tons. Thirty-four days' supply was the average maintained in all industries.

Estimates of production, industrial consumption and stocks on hand follow:

Comparative Estimates of Output, Consumption and Stocks

(In thousands of tons)

	Output	Industrial Consumption	On Hand In Industries
June	50,417	35,541	33,918
July	51,901	36,514	36,998
August	54,577	37,152	38,641
September	57,424	37,512	40,682
October	63,267	*41,115	44,271
Nov. 1			45,535

*Subject to revision

advance in price. From the unprecedentedly large output of recent weeks a sufficient tonnage has been going into domestic stocks to allay any possible fear of an approaching bituminous coal shortage."

In the opinion of the author of the bituminous review, the extraordinary demands placed upon the mines by these two strikes emphasize the inadvisability of attempting to measure development on the basis of normal demand evenly distributed over the year. In other words, the charge that the bituminous industry is grossly overdeveloped will not stand. Emergencies had raised prices, which in turn stimulated production, and the greater production checked prices. Could anyone imagine the same socially desirably solution under rigid federal control?

As further evidence that the United States need fear no fuel crisis, attention was called to the steady shift from union to non-union production and the manner in which the roads south of the Ohio and the Potomac rivers had met the increased load. The rapid development of loading machines was cited as proof that the bituminous industry is in the vanguard of mechanical efficiency. Left unhampered by bureaucratic regulation, the bituminous industry, concluded the speaker, can promise American industry an uninterrupted low-priced supply of coal.

An analysis of the Parker and Copeland bills was given this afternoon by H. L. Gandy, executive secretary of the National Coal Association.

West Virginia Mines Merged In $4,700,000 Company

A merger of nine coal mining properties in the non-union fields of West Virginia has been formed as the West Virginia Southern Coal Co. The total value of the properties in the consolidation is approximately $4,700,000.

Everett Drennen

The properties, comprising 13,362 acres in the Kanawha and Logan fields, are those of the Marsh Fork Coal Co., the Birch Fork Coal Co., the Seng Creek Coal Co., the Leevale Coal Co., the Silush Coal Co., the Vanbail Coal Co., the Basic Coal Co., the Burgess Branch Coal Co. and Siler & Siler. These properties produce about 1,000,000 tons annually, mostly from the Dorothy seam. Their coal reserves are estimated at 72,000,000 tons.

Everett Drennen, formerly of the West Virginia Coal & Coke Co., will be president of the new concern, and Walter H. Cunningham, former general manager of the West Kentucky Coal Co., will be vice-president. An offering of $1,350,000 bonds of the new company was announced Dec. 3.

Georges Creek Revokes Raise

A downward revision of wages following the recent drop in the price of coal was made effective in some sections of the Georges Creek region of Maryland as of Dec. 1. The reduction was accepted by a number of the miners working in the small veins in the Lonaconing section of the Georges Creek region, but about 400 men employed at the Jackson plant of the Georges Creek Coal Mining Co. and the Detmold mine of the Maryland Coal Co. refused to continue work and went home on the morning of Dec. 1.

The Manual of First Aid Instruction of the Bureau of Mines has been revised by Dr. R. R. Sayers, Chief of the Health and Safety Service Branch. The revision, covering all new first-aid practices, tends toward the standardization of methods of first aid, as used in all branches of the mining industry covered by the Bureau.

Fearing Wage Conflicts Next April, President Asks Emergency Laws

Washington, D. C., Dec. 7.—In his message to Congress today the President passes to the legislative body all federal responsibility in connection with coal. It is apparent that the administration is apprehensive as to the continuance of industrial peace at the mines in union territory. After the declaration which the President made today it is recognized that he now is in a position where he can divest himself of all responsibility for what may happen. The text of his reference to soft coal is as follows:

"No progress appears to have been made within large areas of the bituminous coal industry toward creation of voluntary machinery by which greater assurance can be given to the public of peaceful adjustment of wage difficulties such as has been accomplished in the anthracite industry. This bituminous industry is one of primary necessity and bears a great responsibility to the nation for continuity of supplies.

"As the wage agreements in the unionized section of the industry expire on April 1 next and as conflicts may result which may imperil public interest, and have for many years often called for action of the executive in protection of the public, I again recommend the passage of such legislation as will assist the executive in dealing with such emergencies through a special temporary board of conciliation and mediation and through administrative agencies for the purpose of distribution of coal and protection of the consumers of coal from profiteering.

"At present the executive is not only without authority to act but is actually prohibited by law from making any expenditure to meet the emergency of a coal famine."

Hunt Heads Trade Commission

C. W. Hunt, of Iowa, was chosen chairman of the Federal Trade Commission for the ensuing year on Dec. 1. This action was taken in pursuance of the Commission's plan of rotating the chairmanship each year. Mr. Hunt was appointed to the Commission June 16, 1924, and at the time of his appointment was president of the Iowa Farm Federation Bureau.

B. & O. Wants Short Line

The Baltimore & Ohio R.R. has asked the Interstate Commerce Commission for authority to acquire the Cheat Haven & Bruceton R.R., a five-mile line running from Cheat Haven, Pa., to a point in West Virginia. The Baltimore & Ohio would pay $150,000 for the capital stock of the short road.

The Norfolk & Western Ry. has made a definite inquiry for 2,000 70-ton steel hopper-bottom gondolas.

Offering for lease at public auction of four tracts of public coal land in the States of Colorado, Utah and Montana was authorized at the Interior Department last week.

Miners' Wages Too High, Ohio Fact Finders Say; Stress Public Interest

Adoption of the open shop or voluntary acceptance of lower wages by the miners is necessary to the rehabilitation of the coal industry in Ohio, according to the report of the fact-finding committee named a month ago by the Ohio Chamber of Commerce. The report, which was approved and made public on Dec. 4, is significant with the expiration of the Jacksonville agreement in sight and in view of the published statement that the recently organized statewide association of Ohio operators favored the negotiation of a wage scale for the state as a unit and not as a part of the Central Competitive Field, as in the past.

"The real trouble with the present Ohio coal situation," said the committeemen, "is lack of mine discipline, poor efficiency, and a non-competitive mining scale. Unless these difficulties can be overcome, either by the introduction of the open shop or voluntarily, by a radical change from the present attitude of the miners' union, there appears to be little if any chance of returning the Ohio coal-mining industry to its former relative status. If the miners' union will not adjust its wage rates so as to meet this economic condition, then the open shop is the only alternative to permit the Ohio coal industry to function. The unreasonably high labor rates in Ohio mines are responsible for the unnecessary burden on the public. It will be in the public interest that operators of Ohio mines stand together as a unit in bringing this wage-rate situation to a comparable basis so as to protect the public from this unreasonable burden."

The investigators accomplished their work in slightly more than 28 days. They called in representatives of the operators, jobbers and other branches of the industry and also invited the Ohio officials of the United Mine Workers, but they failed to respond. Some of the mine owners at first were indifferent and hostile, but later co-operated. Some of the principal points in the summary of findings are:

Public Interest Important

Neither the operators nor the miners have learned that the public is a party of the third part in this issue and must be reckoned with. There is no one panacea for this problem; neither can the problem be solved at once. The first step is to get the facts and findings to the public so that a sound public opinion may be formed.

As coal is a public necessity, both capital and labor assume definite obligations to the public; in case of conflict the public interest is paramount.

There are not enough working days for the miners with the present overdevelopment in the United States. Last year Ohio mines worked but 151 days.

Though less than 30 per cent of bituminous coal mined in the United States is mined by union labor, nearly all Ohio mines are unionized.

The labor rates in Ohio are about 50 per cent higher than in the competing territory. Ohio miners working part time make a larger annual living wage than similar labor in other industries, working full time.

W. K. Field

Labor is getting 75 per cent of the public's dollar for coal at the mine. The 25 per cent left for the operator is not enough, many mines operating at a loss. The division should be about 60 per cent for labor and 40 per cent for the operator.

Labor must work more days and must compete with other districts if Ohio's coal industry is to be revived. If union labor is not willing to meet this economic situation, then the open shop is the only alternative in the public interest.

Both the miner and the operator must recognize that coal is a public necessity, that coal mining is a public calling and that the public will be the final arbiter.

The miner and the miner's family must live by the year. If he works only half time then the rate per hour, per day or per ton for the same living standard must be two times what it would be if he worked full time.

A permanent fact-finding agency, preferably as a part of the U. S. Department of Commerce, should be created so that salient facts of the mining industry could be gained from a disinterested source where the public would have confidence in the statements made.

Domestic consumers need to be educated to appreciate that the cheapest place to store coal is in the consumer's bins. Large volume of out-of-door storage for industrial service is entirely feasible providing you know the character of the coal; make the storage pile in a definite way and watch the storage pile in an approved manner.

Railroads should provide storage-in-transit rates so that the coal can be taken off the car, stored and then loaded on another car and delivered to final destination, at substantially the same through traffic rate.

The operator should not sell coal except to bona fide dealers or consumers of coal, thus preventing speculation.

Consolidation of coal properties would be to the public interest if the properties were put in at their fair value and high-cost mines eliminated.

Field to Resign as President Of Pittsburgh Coal Co.?

W. K. Field has resigned as president of the Pittsburgh Coal Co., to take effect immediately, according to a general report in Pittsburgh. W. G. Warden, chairman of the board of directors of the company, refused to either confirm or deny the report, and the same attitude was taken by C. E. Lesher, assistant to the president. The trade has been expecting Mr. Field's resignation for some time, as he has been comparatively inactive in the affairs of the company for some months. There is no intimation as to who might succeed him.

Mr. Field issued the following statement on Tuesday: "I have been in ill-health for the last few months and am considering my resignation as president of the Pittsburgh Coal Co. I will reach a final decision before the end of the month. The position as head of the Pittsburgh Coal Co. is a strenuous one and unless my health improves there is no use in my trying to carry it on."

Unionization Campaign On In Southern Indiana

At a meeting of miners members of the United Mine Workers, held in Evansville, Dec. 2, steps were taken to organize the southwestern Indiana field. The campaign in this district is said to have officially gotten under way when two national organizers were sent into the field by John L. Lewis, international president. The organizers who attended the Evansville meeting said that a vigorous policy for District No. 11 would be put in force and a campaign carried on among the non-union miners.

William Stinson, district board member in District 11, said it did not matter if miners in western Kentucky were discharged for having joined the union, as they can come to the southern Indiana field and get all the work they want. Munnell Wilson, former Kentucky legislator and now organizer for the United Mine Workers, said the plan of President John L. Lewis to organize southern Indiana, southern Illinois and northern Kentucky is only the beginning of a campaign that will be extended to the mining regions of all of the states in the union.

Not the Same Hillman

The Hillman Coal & Coke Co., a Pennsylvania corporation, having its principal office in Pittsburgh, Pa., announces that the Hillman Coal & Coke Co., a corporation under the laws of the Province of Ontario, with its principal place of business in Toronto, Ont., which company recently became insolvent, is not a subsidiary of the Hillman Coal & Coke Co. of Pennsylvania, has no connection whatsoever with the latter company, and further, that no officer, director or stockholder of the Pennsylvania company has or ever had any interest whatsoever in the Canadian company.

Determined Drive for Funds Planned In Congress to Aid Mining Industry; Hammond Speech Will Be Stressed

By Paul Wooton
Washington Correspondent of *Coal Age*

Legislators from mining states regard as insufficient the sums requested for the Bureau of Mines and the Geological Survey in the budget presented to Congress Dec. 7. It is not enough, they hold, to carry out the work for which the mining industry is calling.

The new budget carries $1,861,060 for the Bureau of Mines and $1,857,580 for the Geological Survey. In the case of the Bureau of Mines the Director of the Budget has requested of Congress $53,340 less than was appropriated for work of the present fiscal year. The Survey's budget is $38,140 in excess of the amount appropriated for the fiscal year to end June 30.

The amount allowed includes only $30,000 for the new economic work of the Bureau. This $30,000 forms a part of the $225,000 which the budget requests for "promoting mineral commerce." Into this paragraph, however, has been grouped the statistical work taken over from the Geological Survey, the coal work taken over from the Bureau of Foreign and Domestic Commerce, the oil-shale investigation and several other items.

Scope of Proposed Activity

The scope of the work to be undertaken under the new heading of "Promoting Mineral Commerce" is indicated by the language which is suggested for the appropriation act. This reads in part as follows:

"For increase in investigations and the dissemination of information concerning the commercial problems of the mineral industries with a view to finding markets for the mineral products of the mines and quarries and promoting commerce, domestic and foreign, in the mining, quarrying, metallurgical and other mineral industries; including studies and reports relating to uses, reserves, production, distribution, stocks, consumption, prices and marketing of mineral commodities and primary products thereof; preparation of the reports of the mineral resources of the United States, including special statistical inquiries and statistical studies and reports relating to mine accidents."

The itemized list of the appropriations asked for the Bureau of Mines is as follows: General expenses of administration, $86,000; for investigations of mine accidents, $390,630; mining investigations in Alaska, $10,860; operating mine-rescue cars and stations, $277,380; testing fuel for the use of the United States, $154,000; mineral mining investigations, $99,570; petroleum investigations, $198,260; mining experiment stations, $173,000; care of buildings and grounds at Pittsburgh, $71,360; helium investigations, $75,000; investigating potash deposits, $100,000; promoting mineral commerce, $225,000.

The budget carries the following appropriations for the Geological Survey: Topographic surveys, $515,000; geologic surveys, $333,000; volcanologic surveys, $20,000; investigation of the mineral resources of Alaska, $50,000; for stream gaging, and investigations of ground waters, $150,000; classification of public lands, $225,000; engraving and printing maps, $93,000; preparation of illustrations, $24,580; leasing work, $308,000.

It is known definitely that a determined effort will be made in Congress to override the budget in this instance. To this end use is to be made of the remarks of John Hays Hammond at the Pittsburgh conference on the utilization of bituminous coal. In that presentation he referred to the need for fundamental research into underlying science and into practical problems of mining geology and engineering.

To Publish Hammond Address

The text of Mr. Hammond's address will be printed in the *Congressional Record* and members from mining states will try in other ways to direct the attention of their colleagues to certain portions of that speech. Emphasis wil be placed upon Mr. Hammond's exposition of the absolute dependence of modern industry on the minerals, including the mineral fuels, and how the outstanding feature of American industrial development is the increasing use of power. The per capita consumption of energy in the United States is ninety times as great as it is in India and three times as great as in most of the countries of Europe.

Senator Oddie, who is leading the movement, is struck with the complete case Mr. Hammond unwittingly made for those who are demanding more cooperation on the part of the federal government in the solution of the problems which confront the mining industry. Some of Mr. Hammond's points which have been selected for use in the drive for increased appropriations for mining are:

The increased use of power has made possible the high productivity of the individual American worker and the rise in the standard of living. In the manufacture of pig iron the output per worker has increased sevenfold since 1900. In the automobile industry it has trebled in the last twelve years. Increased dependence on the minerals is shown by the fact that in the last century, while the white population was increasing only threefold, the production of copper increased sixtyfold; of mineral fuels, seventy-five fold and of pig iron a hundredfold.

The maintenance of this enormous consumption of products of mines depends on engineers and scientists. It will be a long time before the day of absolute exhaustion of these resources, but in the meantime there is an immediate tendency for the natural difficulties in mining to increase. As the mines get deeper and the richer materials are extracted it forces the utilization of lower grade deposits. An inevitable increase of cost and of price to the consumer would result were it not for improvement in science and technology. In the anthracite mines the average depth has increased 75 per cent in the last generation. The average thickness of the beds worked is barely one-half of what it was.

Science and technology have increased the output per worker in American bituminous mines by 67 per cent since 1890. They have reduced the fatal accident rate in British coal mines to one-fourth of what it was in 1850.

The consumption of coal per horsepower hour was reduced from 10 lb. in 1820 to 1.4 lb. before the war. Since the war the advance has been even more rapid. Improvement in steam practice has increased fuel efficiency in the production of electricity by 54 per cent in the last six years. As a result of these contributions of research the actual price of power to the consumer, in relation to other commodity prices, has been reduced in spite of the increased difficulties in mining. The scientist and the engineer stand between the consumer and higher prices of power and metals. The research needed is not only technical but economic. Research without considering the limits of costs and profits would be academic. Studies of market possibilities, requirements and future demands are particularly important.

These and other points made in Mr. Hammond's speech will be quoted repeatedly on Capitol Hill during this session.

EDITOR'S NOTE—*The foregoing Washington letter reflects certain views of official Washington. Due to the fact that policy as a rule prevents government officials from permitting their views being quoted directly, the authority for these reports is necessarily somewhat vaguely referred to. The views reflected are not those of any one group of officials, but of different men, in the legislative and executive departments. There is no necessary connection between their views and* COAL AGE *editorial policy; neither do they necessarily represent Mr. Wooton's personal views. It is felt that the opinions thus faithfully reflected will be of great interest to the industry. Where opinions are cited from sources outside of the government, the source will be specifically stated.*

Union Call Issued to Act On Wage Demands

John L. Lewis, international president of the United Mine Workers, issued a call on Dec. 1 for a convention of the organization at Indianapolis on Jan. 25, 1927. An important function of the convention will be to formulate a new wage demand for the Central Competitive Field and to appoint a scale committee which will meet with that of the mine operators at Miami, Fla., Feb. 14, 1927.

The wage scale to be fixed at the Miami conference will supplant that made in the Jacksonville agreement, which expires on March 31.

Smokeless Operators Meet and Elect Officers

Election of officers for 1927 was the principal business at the annual meeting of the Smokeless Coal Operators' Association of West Virginia, held at the Waldorf-Astoria Hotel, New York City, Dec. 2.

L. Rodman Page, Jr., Crozer-Pocahontas Co., Philadelphia, Pa., was chosen president. W. P. Tams, Jr., Gulf Smokeless Coal Co., Tams, W. Va., was elected first vice-president and John L. Steinbugler, W. C. Atwater & Co., New York City, was made second vice-president. G. H. Caperton, New River Coal Co., Charleston, W. Va., was again elected treasurer. E. J. McVann, Washington, D. C., is secretary of the organization.

O. L. Alexander, Pocahontas Fuel Co., New York, and W. C. Atwater, W. C. Atwater & Co., New York, were named directors for the Pocahontas operators. Mr. Caperton and Otis Mouser, Stonega Coke & Coal Co., Philadelphia, were chosen to represent the New River group on the board, with John B. Laing, Nelson Fuel Co., Lewisburg, W. Va., representing the Greenbrier section. John T. Wilson, Dry Fork Colliery Co., Bluefield, W. Va., and James D. Francis, Pond Creek-Pocahontas Coal Co., were made directors for the Tug River district. P. M. Snyder, East Gulf Coal Co. and allied interests, Mt. Hope, W. Va., and W. A. Richards, Ashland Coal & Coke Co., Ashland, W. Va., represent the Winding Gulf field.

The meeting closed with a luncheon presided over by President-elect Page. W. J. Harahan, president, Chesapeake & Ohio Ry., pointed out the necessity for adequate rates if railroads are to maintain proper transportation service and facilities. It was his belief that transportation facilities should be ahead of, not behind traffic demands. He looked for good business next year, but cautioned the operators on the labor situation. It was a problem, he said, which would require real statesmanship in handling. He made no specific suggestions in connection with labor, but told his audience that the railroads would be glad to help if they could.

Expects Trouble in Congress

A warning that the coal industry must again fight for freedom in Congress was voiced by Harry L. Gandy, executive vice-president, National Coal Association. The status of the coal regulatory proposals, he pointed out, was unchanged by the adjournment last summer. The Copeland bill was on the Senate calendar and might be called up at any time. The House committee on interstate and foreign commerce was still wrestling with the Parker bill, which had been held up by a tie vote four times, with five members of the committee absent.

New England, said State Senator Goss of Connecticut, wants to work with West Virginia in pushing the sale of bituminous coal in the Northeast, both as an industrial fuel and for household purposes. Anthracite prices, he declared, were too high—especially for the factory workers. He urged that efforts be made to secure a more effective working arrangement with the retail dealers so that the latter would put sales pressure on the distribution of bituminous coal for household purposes.

James F. Callbreath, general secretary, American Mining Congress, invited the operators to join in the deliberations of his organization at Washington this week.

L. Rodman Page, Jr.

Newly elected president, Smokeless Coal Operators' Association of West Virginia

Americans Ask Mine Status Under Mexican Coal Law

American companies owning coal deposits in northern Mexico have submitted a list of thirty questions to Luis Morones, Secretary of Industry, Commerce and Labor at Mexico City, in regard to the Coal law. Information was sought as to whether the concessions to be given in exchange for the titles to their property would show clearly that ownership was based upon rights acquired before 1917. Señor Morones agreed to give a written reply at an early date.

Señor Morones assured the coal operators that the government had no desire to injure the coal business in any way and that he personally would apply the law so as to remove any point detrimental to the coal industry.

Regarding the surface tax, which the coal men say is injuring their business, the Minister stated that this matter was not under his department, but that he would help in every way possible to have the Treasury Department adjust the taxes to the satisfaction of the operators.

Representatives of the American Smelting & Refining Co., Monterey Steel Works, Masafield Coal Co., Mexican Coal Co., Coahuila Coal Co., Escondido Coal Co. and Mr. Lamar, a private owner of coal mines, took part in the conference with the Minister. They expressed gratification over the results and said they thought that the coal companies would be able to operate on an even larger scale than at present.

Pennsy Opposes L. & N. E. Lease to Reading

The Pennsylvania R.R. launched an attack Dec. 2 on the recommendation of C. V. Burnside, assistant director of finance of the Interstate Commerce Commission, that control of the Lehigh & New England R.R. be acquired by the Reading system. Henry Wolfe Bikle, counsel for the Pennsylvania, filed a brief asserting it was not in the public interest to place control of the Lehigh & New England in the Reading, controlled as it is by the New York Central and the Baltimore & Ohio, "especially in view of the dominant control which the Reading would be able to exercise in the affairs of the Lehigh & Hudson road."

Mr. Bikle said Mr. Burnside "has attributed importance to the agreement of the Reading to maintain existing through rates and joint rates, whereas it seems clear that this is nothing more than a promise to do what the Commission would, in any event, require to be done. The Reading has been wholly vague as to the terms on which it would enter into new through routes and joint rates. With respect to the matter of such routes and rates, this is the important feature of the situation so far as the future is concerned."

The Pennsylvania further maintained that it is not in the public interest to approve the proposed lease until the method of effectuating the government's policy with respect to railroad consolidation is more definitely determined than it is at present.

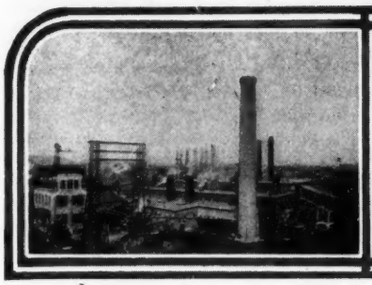
The brief also asserted it is not in the public interest to approve a lease which results in concentrating so large a proportion of the production of anthracite coal on the tracks of one railroad.

Ruling Soon in Suit to Force Adherence to Union Pact

An appeal having been taken from the decision of Judge Warren B. Kittle of the Circuit Court of Barbour County, West Virginia, the West Virginia Supreme Court, at its January term, will pass upon the question of whether the United Mine Workers can force a coal company to operate with union men only and to pay the Jacksonville wage scale as long as the Baltimore wage agreement is in existence.

The contract involved in the case is that of the United Mine Workers and seven of its members against the Simpson Creek Collieries Co., operating two mines at Galloway. The union asked an injunction to prevent the company from operating its mines unless it employed union men and paid the union wage scale until March 31, 1927, the claim being based on an agreement between certain northern West Virginia operators and certain district officials of the union, signed at Baltimore.

It was contended by the union that the Simpson Creek company gave notice last year that the mine would be closed down on Nov. 1, 1925, but that soon after the closing notice was posted the mines were reopened on an adjusted wage scale.



News Items From Field and Trade

ALABAMA

New Deepwater Mine Planned.—It is reported from Jasper, headquarters of the Deepwater Coal & Iron Corporation, that this company is making preparations to open a new mine at Arkadelphia, just over the line from Walker in Cullman County, where the Black Creek seam of coal is to be developed.

COLORADO

State Mining Laws Upheld.—In a test case, the state Supreme Court on Nov. 29 upheld the validity of the Colorado coal mine inspection laws and declared the state had, through police powers, the right to enact legislation safeguarding life and property in coal mines, without violating the 14th amendment to the Federal Constitution. The case involved the closing of a small mine near Colorado Springs, owned by Fred Sevick and operated by him and one helper. The decision means that nearly 150 small mines over the state must be closed until their owners comply with the inspection laws, it was said at the office of James Dalrymple, state coal mine inspector. Dalrymple, on Jan. 23, ordered Sevcik's mine closed because Sevcik failed to provide mechanical ventilation or put the mine in charge of a certified foreman. Sevcik obtained a permanent injunction against Dalrymple's order in District court at Colorado Springs. Dalrymple appealed, and the high court's opinion reversed the lower court.

ILLINOIS

Wallace Not the Lessee.—In *Coal Age* on Nov. 25 there was an item to the effect that the O. K. and Meek mines at Marissa had opened and that they were leased to the Wallace Coal Co., of St. Louis. E. J. Wallace, president of the company bearing his name, states that our correspondent was misinformed, that the Wallace Coal Co. is not interested in those mines in any way and never has been. The mines, he adds, have been leased to the Egyptian Mining Co., a corporation under the laws of Illinois, having headquarters at Marissa, but with which the Wallace company has no connection except that it handles the coal in the St. Louis market.

Blamed for Herrin Riot.—Kline McDowell, vice-president of the Southern Illinois Coal Co., who was among those massacred in the Herrin riot in June, 1922, has been directly named as the "instigator" of the fighting that cost the lives of twenty-two men. The Illinois Industrial Commission has awarded $3,750 to Mrs. Beulah McDowell, the widow, and the company, in resisting this allowance, claimed that McDowell was an official of the company and not entitled to compensation under the state law. An appeal petition has been filed with Judge Joseph B. David in Chicago. The petition sets forth that between April 1 and April 15 the company agreed not to load coal cars because of a strike of miners in Illinois. "McDowell and William J. Lester, president of the coal company, determined to load cars regardless of the pledge," the petition states. "On June 22, after McDowell and the union workers agreed to a truce, as McDowell was leading his men between two lanes of union workers, they were attacked and in the massacre that followed McDowell and some of the workers were killed."

INDIANA

The Joe Bryan mine, in Warrick County near Chandler, owned by Joe A. Bryan, of Evansville, has resumed operations.

Fiscal Year's Output Higher.—During the fiscal year ended Sept. 30, 1926, a total of 18,560,149 tons of coal was mined in Indiana as against 17,693,409 the year preceding, according to the annual report of A. C. Dally, state mine inspector. A somewhat smaller increase in the total wages paid the latter year is shown, employees of major mines receiving $28,644,657.10 during the 1925-26 year as against $28,250,355.05 the year before. During the 1925-26 fiscal year a total of 17,897 men were employed in the major mines of the state, while in the preceding year 19,839 miners worked.

Asks Sale of Pigeon Creek Property.—The Continental and the Commercial Trust and Savings banks of Chicago have filed a petition with the Warrick County Circuit Court at Boonville asking that L. A. Folsom, receiver of the Pigeon Creek Coal Co., be ordered to sell all the property of that company in his possession. Several months ago the company's property was sold at receivers' sale by Folsom to the Patoka Coal Co., in which James P. Goodrich, former Governor of Indiana, is interested. Later on Judge Caleb J. Lindsey of the Warrick County Circuit Court ordered the sale annulled because it did not bring in sufficient funds considering its worth.

William H. Tobin, well known Indiana coal man, who gives his address as the Columbia Club, Indianapolis, has filed a voluntary petition in bankruptcy in federal court, showing aggregate debts of $270,503 and assets of $570, for which he asks exemption. The schedule of debts shows $34,488.18 unsecured claims against him, $5,000 secured claims and $231,015 in notes and bills which should be paid by other parties, he states in the petition.

Improvements started several months ago at the Stock coal mine at Chandler have been completed and the mine now is being operated with a full force.

KANSAS

Dorchy Asks Rehearing.—August Dorchy, vice-president of district 14, United Mine Workers, whose conviction for violating the Kansas Industrial Relations Act in the calling of a coal mine strike was recently affirmed by the U. S. Supreme Court, petitioned the court Dec. 3 to grant him a rehearing. He contended his conviction should have been set aside because the compulsory arbitration features of the Kansas act did not apply to coal mines.

KENTUCKY

Union Forces Hold Rally.—More than 2,000 coal miners gathered in a Thanksgiving Day rally at Central City and marched to Greenville, a short distance away, where they heard several addresses. W. D. Duncan, president of District No. 23, United Mine Workers, said that the present union campaign would not stop until "every mine in the district has been organized." Charles Gorman, president of the Kentucky Federation of Labor, was another speaker. Mine operators in the west Kentucky field do not fear the unionization of their mines, it is said.

Dunraven Mines Leased.—Judge J. G. Campbell, of Hazard, has leased the Dunraven mines at Dunraven, in Perry County, to John McIntosh and others, who are starting the mines.

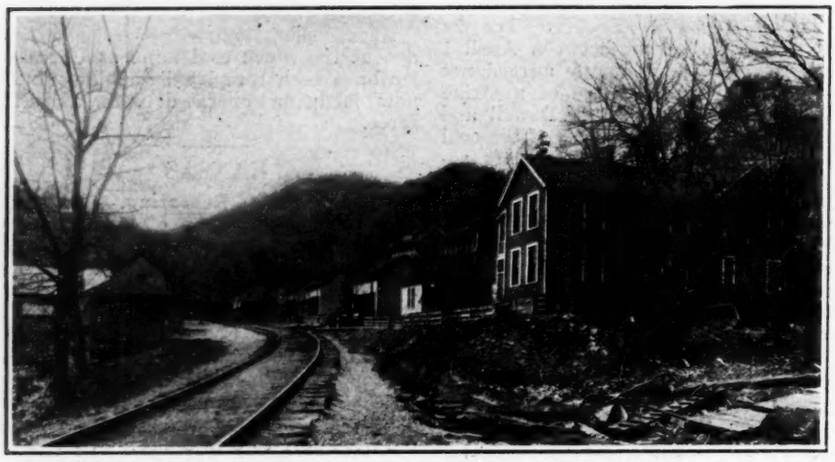
Columbus Company Again Expands.—The Columbus Mining Co., of which A. L. Allais is president, continues to extend its operations in eastern Kentucky. The company recently purchased the No. 1 mine of the Meem-Haskins Coal Corporation located on the Carrs Fork branch of the Louisville & Nashville Ry. It also acquired the adjoining coal lands of the Red Oak company, owned by the Garrard Brothers, of Barbourville.

Union Men "Fired."—Twenty-five employees of the Norton Mining Co., at Nortonville, have been discharged because of their affiliation with the United Mine Workers and about the

same number in the mine have quit work in a sympathetic walkout, the officials of the mining company announced on Dec. 3. The company expects to have a full force working in the mines again soon.

New Coal Fields for Lease.—The Kentenia-Puckett Corporation, which has heretofore withheld from development 17,000 acres of coal lands in Harlan County, announces that this is now available by subdivision to responsible operators under standard form of all

To Probe Tipple Fire.—An investigation will be made to determine the cause of the fire which recently destroyed the tipple and power houses of the White Star Coal Co., at Pineville, according to Logan Hammond, presi-



Part of the Company Houses at Fork Ridge, Tenn.

This mine of the Fork Ridge Coal Co. is located about seven miles from Middlesboro, Ky. It is quite an old mine but the equipment is now being rehabilitated and the production increased. C. W. Rhodes is vice-president and general manager. The production per day is now 1,100 tons, and it is planned to bring it to 50,000 tons per month within a year.

dent of the company. The loss was estimated at $80,000. Fire, also believed to have been of incendiary origin, destroyed the power house at the main entry of the mine, about two and a quarter miles from the tipple. Mr. Hammond said he felt sure that the fire was the work of an outsider determined to shut down the mine during the prevalence of high prices for coal. It will take about six months to replace the tipple, Mr. Hammond said.

NEW YORK

Frank L. Burns Coal Co., New York City, has filed a certificate in the Office of the Secretary of State increasing its capital from 5,000 shares preferred stock, $100 par value, and 25,000 shares common stock, no par value, to 15,000 shares preferred stock, $100 par value, and 150,000 shares common stock, no par value. Moes and Gennet, 19 Cedar St. are attorneys for the company.

OHIO

Hanna Buys Fairpoint Mine.—The Wheeling & Lake Erie Coal Mining Co., controlled by the M. A. Hanna interests, of Cleveland, has purchased the Fairpoint mine and holdings of the Troll Coal Co. Operations will be continued with approximately 500 men at work. The company purchased had 825 acres of coal land still undeveloped, which passed to the new owners.

J. W. Adams, of Lexington, has been appointed receiver for the Commercial Mining Co., with mines near Ulvah, and is resuming operations.

PENNSYLVANIA

Will New Inspectors Be Confirmed?—When the Legislature goes into session in January the appointment of seven anthracite mine inspectors recently named by Governor Gifford Pinchot will come before the Senate for confirmation. At this time it is questionable whether or not the appointments will be confirmed. The new state administration, headed by Governor John S. Fisher, will take over the reins and political scalping will be the order of the day. In the meantime the new appointees are rallying their political friends to their cause and indications point to a lively contest over the confirmation.

Hudson Seeks 225-Acre Tract.—The Hudson Coal Co., it is reported in mining circles, is negotiating with the heirs of George Sanderson, James Robb and others for the purchase of a 225-acre tract of coal land underlying the Green Ridge section of Scranton and part of the Borough of Dunmore. Between 50 and 60 per cent of the coal is already mined from this tract under the terms of a lease originally made on May 10, 1875. The lease is in the hands of the Delaware & Hudson Railroad Co., but the Hudson Coal Co. is doing the actual mining. Originally the agreement was made with John Jermyn, who later turned it over to the Delaware & Hudson R.R. The D., L. & W. company at one time operated the tract. This company subsequently turned the lease over to its present holder.

New Boiler House Burns.—A heavy loss was caused recently when fire destroyed the boiler house at the Otto mine of the Philadelphia & Reading Coal & Iron Co., at Branchdale. This structure was finished only two weeks before the fire wiped it out. The house contained four batteries of tubular boilers with traveling grates and automatic feeders. The blaze is said to have started from an overheated stack. Mine officials say the old boiler plant can still be operated and it was hoped the mine would not have to be closed. The new boilers cost $500,000 to install and the building represented another $50,000 investment.

Hard-Coal Briquets Not Taxable.—Under a ruling handed down by the Dauphin County Court briquets manufactured from anthracite are not taxable under the Pennsylvania tax on hard coal. The case was filed with court by the American Briquette Co. when the state attempted to levy a tax on its products. The court decided that while it is true that culm is used in the manufacture of the briquets it is also essential that a mechanical process be followed, and on this account the coal tax could not be made to apply.

Big Pump for Flooded Mine.—The Lehigh Valley Coal Co. is installing in the flooded No. 2 slope of the Drifton mine a pump throwing 3,000 gallons a minute. This is the operation where a deep-sea diver was brought from New York to survey conditions around the pumps which were drowned out during the storm of Nov. 16. The water rose 49 ft. above the apparatus.

Oakville Mine Active Again.—Operations were resumed at the mine of the Oakville Coal Co., near Latrobe, last week. Operations were suspended last summer when the owners decided that the prices being received for coal were insufficient to keep the mine operating. The pumps had been withdrawn, the electric wires disconnected and the entire plant dismantled. The company expects to ship coal and coke during the entire winter.

Lehigh Valley Coal Co. has awarded a contract to a Hazleton construction company to strip anthracite measures from its properties between Coleraine and Tresckow. It is estimated the work will require eight years, and cost of removing top rock and clay will be about $800,000. The underlying seam is reputed to be so rich that preparation costs will be made up soon after production is started, possibly in 1934.

In addition to a central laboratory, the Pittsburgh Coal Co. has established branch laboratories at five mines for purposes of ash determination. Samples are checked also at the main laboratory. Construction of the new cleaning plant, at Montour No. 10 mine, is well under way. This plant will have a capacity of 325 tons per hour, 2½ in. and smaller.

TENNESSEE

Stripping Started at Freemont.—The mine formerly operated by the Tracy City Fuel Co., at Freemont, with John E. Flannagan in charge as president and general manager, which was closed a few months ago, has been taken over by the Consolidated Coal &

Iron Co., of Tracy City, with Tom Lockhart as president and general manager. This mine, which formerly was developed on the double-entry room and pillar system, will be worked hereafter as a stripping proposition. The new company has purchased two power shovels to remove the overburden, which is 3 to 30 ft. thick. The operation is in the Sewanee seam.

L. Clark, who was formerly connected with the Highland Coal & Lumber Co. as secretary-treasurer, has severed his connection with that company and taken over a part of the Sprangle holdings in Cumberland County, which were formerly operated by the Isoline Coal Co., in what is known as the Isoline seam, and will begin operations on this tract just as soon as tipple, spur track, etc., can be constructed. The name of the new company is the Cumberland Coal Co.

The headquarters of District 19 of the United Mine Workers have been moved from Knoxville to Jellico.

UTAH

Find Coal in Utah County.—The Diamond Coal Co., of Provo, has struck a coal seam at its property in Diamond Fork Canyon, Utah County, and development is proceeding along commercial lines. "We are now in 250 ft. and our vein is gradually widening as we go," said the head of the company last week. "It is my opinion that within six months we shall have a 6-ft. seam of pure coal at our property." The property has been undergoing development for the past two years. A tunnel of 250 feet has already been run into the mountain and coal-bearing fissures were met most of the way.

The Independent Coal & Coke Co. will construct a new tipple soon after the first of next year. It is stated that it will be of modern all-steel construction and will involve a substantial outlay.

The Denver & Rio Grande Western R.R. has made its first shipment of coal over the new lines serving the Independent Coal & Coke Co.'s mine at Kenilworth. The grade has been cut from 7 per cent to a maximum of 3 per cent, thus making it no longer necessary to use Shay locomotives in hauling from this mine. The maximum daily tonnage that could be moved on the old line was 2,000, but the new grade makes the tonnage practically unlimited.

VIRGINIA

Wise Properties Sold.—R. H. Bolling, Norton contractor and one of the owners of the Norton Feed Co., purchased the Charleroi Coal Co., operating near Wise, when offered at public auction at Wise by A. N. Kilgore, trustee. The property, which has been operating for a number of years, brought $11,000. J. C. Whitson, a large stockholder and a creditor, has purchased the Lonesome Pine Coal Co. which was recently offered by Jay Litts, trustee. He paid $4,250 for the property, said to be one of the most desirable of the smaller mines in the Wise field.

WEST VIRGINIA

The purchase by A. J. Dalton, of Huntington, of the equipment of the Logan Block Coal Co. at a commissioner's sale, for $10,000 has been confirmed by Judge Shepherd of the Cabell County Circuit Court. The purchase included all property and equipment of the Logan Block Co. except the leasehold formerly held by the Number Five Block Coal Co. The court granted four months time to the purchaser in which to remove the equipment.

The name of the Brydon Brothers Coal Corporation has been changed and hereafter the company will operate under the name of the Belnor Coal Company, the name being taken from the Belington & Northern Ry., on which the mines are located. W. S. Brydon is superintendent of the mines and has been working with a force of men getting the mines in readiness for operation.

The Neely tract of 56 acres of Sewickley coal in Cass District of Monongalia County has been sold to the Continental Coal Co. The price was not disclosed. The tract immediately adjoins other acreage owned by the Continental company and gives that concern a total of about 1,500 acres upon which to draw. The Continental mine located at Cassville on the Scott's Run R.R. is one of the largest in the Morgantown field, having a normal capacity of about sixty railroad cars a day. The Neely tract since 1910 had been owned jointly by Dr. D. H. Courtney and the L. S. Brock estate.

Output Heavier Than Year Ago.—Statistics compiled from car distribution reports of the C. & O., the Virginian and the Norfolk & Western disclose that during the first ten months of 1926 production gained 6,205,674 tons over the corresponding period of 1925. The output in the four low-volatile fields—Pocahontas, Tug River, Winding Gulf and New River—was 43,937,540 net tons as compared with 37,731,866 net tons during the first ten months of 1925. If the present rate is maintained throughout the balance of the year, smokeless output will reach approximately 50,000,000 tons, or the largest in the history of the low volatile fields.

CANADA

Defer Part of Coal Duty Hearing.—At its public hearing, on Jan. 18 next, of the application for tariff changes on coal and coke filed by the Dominion Coal Co., subsidiary of the British Empire Steel Corporation, the Tariff Board will not consider that phase of the appeal requesting an increased duty on bituminous coal. At the request of the Dominion company, this particular portion of the application will be deferred for hearing at a later time, and the board on Jan. 18 will hear evidence regarding the other three phases of the application. (1) A request for a duty on anthracite screenings. (2) Imposition of a duty on coke imported for metallurgical, foundry and domestic uses. (3) Abolition of the rebate on coal imported by operators of byproduct coke ovens.

British Columbia Output Lower.—Coal production in British Columbia during the first nine months of the present year totaled 1,658,678 gross tons compared with 1,777,965 tons, in the corresponding period of 1925, a decrease for the present year of 119,287 tons, according to figures issued by William Sloan, Minister of Mines and Provincial Secretary. In all the chief coal-mining districts, with the exception of the Nicola-Princeton section, where a slight increase over 1925 was reported, decreases have been registered in volume of output this year as compared with last year.

At the Face in a 35-Ft. Room in the Splint Seam Near Harlan, Ky.

The coal is 56 in. high and without parting. Above it is 6 in. of hard drawslate which comes down with the coal. The rooms are double-tracked, a track being laid close to each rib and light posts set between. The loader is placing a heavy lump on the car.

Among the Coal Men

Judge George W. Maxey, of Scranton, an independent operator, who for some weeks past was mentioned prominently as Governor-elect John S. Fisher's choice for Attorney General of Pennsylvania, has set political rumors at rest with a statement that he is not a candidate for the office.

Scott Turner, director of the U. S. Bureau of Mines, was in San Francisco recently, visiting Bureau stations.

William Bok, formerly assistant mine manager of the Liberty mine, Gillespie, Ill., has been named manager of the mine at O'Fallon, Ill.

W. W. Dartnell, mining engineer, Valley Camp Coal Co., and **E. F. Miller**, general manager, Bertha Consumers Co., having completed the coal-mining projects for the Donugal Trust, the largest coal-mining operation of the Russian Government, returned to America on a leave of absence, arriving Nov. 29.

Alexander Howat, former president of the Kansas miners' union, has been in central Pennsylvania recently aiding the campaign of John Brophy for president of the international union. Howat asserts that the policies of John L. Lewis are responsible for the loss of 200,000 members by the union. He has been laying special emphasis on that plank in the Brophy platform urging organization of non-union miners in preparation for the situation that will confront the union when the Jacksonville agreement expires.

In connection with a reorganization of the operating and accounting departments of the Clearfield Bituminous Coal Corporation, Indiana, Pa., effective Dec. 1, **M. S. Mitchell** has been appointed assistant to the general manager; **H. J. Hinterleitner** will continue to act as general superintendent and will also act as chief engineer, and **T. F. McCarthy** has been named assistant superintendent.

J. W. Reed, safety director for the Consolidation Coal Co., Fairmont, W. Va., has gone to Kentucky to spend a week at the company's operations at Jenkins and Van Lear.

John Brophy, president of district 2, United Mine Workers (central Pennsylvania), modestly assumes responsibility for the recent wage advance. The operators were frightened into restoring the Jacksonville scale by his strike call, says Mr. Brophy, though the miners ignored it.

Obituary

Frank Ambach, 34 years of age, formerly president of the Phoenix Fuel Co., Louisville, Ky., in which he sold his interest recently on account of poor health, hung himself at his home there on Nov. 29. This was his third attempt at suicide following a nervous breakdown about two months ago. At that time he made unsuccessful efforts to shoot himself within a church, and later at drowning, and then was confined in a sanitarium for a time. Not very strong to start with Mr. Ambach had been quite successful in the coal trade, operating the Dixie Fuel Co. as local sales manager, after getting out of the army; and later formed the Phoenix concern as his own company.

C. E. Buek, for many years a prominent industrialist in the Birmingham (Ala.) district and connected with the Lacey-Buek Iron Co. in the operation of furnaces and coal mines, died suddenly in Chattanooga, Tenn., recently, where he had resided for the last ten years.

S. C. Cowgill, East Des Moines (Iowa) coal operator, died Nov. 29 at the Iowa Lutheran Hospital as a result of injuries received in an accident at one of his mines near Hastie on Nov. 11. At that time Cowgill's back was broken by a fall of slate. He was 57 years old.

Keystone View Co.

French Fuel Experts Leave for Home

Left to right—General Georges Patart, former Minister of Munitions (retired) of France; Henri Winkler, chemical engineer of the Association of Coal Mine Owners, Paris, and Jean Bing, Engineer of Mines, shown on the deck of the Str. DeGrasse. They sailed for France last week after a visit to this country lasting three weeks, part of which was spent at the International Bituminous Coal Conference at Pittsburgh.

H. M. McGray, of Fort Smith, Ark., formerly superintendent of the Western Coal & Mining Co., died at Orlando, Fla., Nov. 26. He was on a visit to two sons at Orlando when he became ill. He survived his wife eight days, she also having died while on the visit to their sons.

Herbert J. Belden, general manager of the coal business of the Pennsylvania Railroad Co. at Sodus Point, Lake Ontario, died on Nov. 20, aged 62. He was born at Sodus Point and had been justice of the peace there several years.

Ira R. Browning, coal-mining engineer at one time and of late Utah State Highway Commissioner, died last week from pneumonia.

Traffic News

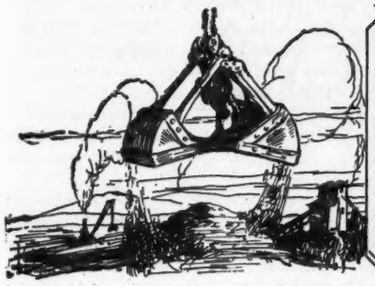
The Wesson Coal Co., of Topeka, Kan., has filed a complaint with the Interstate Commerce Commission against rates on coal from mines in Kansas and Missouri, taking Pittsburg rates, to points in Kansas. The rates are alleged to be unreasonable and excessive and in violation of the rates provided under the Commission's decision in docket 14661, the Southwesten Interstate Coal Operators case. Establishment of just and reasonable rates and reparation are asked.

It has been recommended to the Interstate Commerce Commission by Examiner Macklay that the rate of $4.73 per gross ton on bituminous coal from the Clearfield district of Pennsylvania to Glenwood, Mass., be found unreasonable to the extent it exceeds $4.35, the Boston switching-district basis contemporaneously applicable to Glenwood on Pennsylvania anthracite.

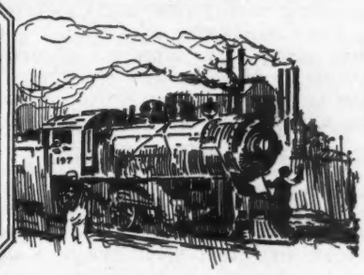
Association Activities

The Kentucky River Mining Institute held an interesting meeting at the Combs Hotel, in Hazard, recently, which was presided over by President Medaris, of the Harvey Coal Co., Harveyton, Ky., who was elected at the last meeting. Serious consideration was given safety in mine work. Henry Pfenning, of the Southeast Coal Co., Seco, detailed plans which his company had practiced for several years to reduce accidents to the minimum. Marketing conditions also were discussed. There will be monthly meetings in Hazard in the future.

R. A. Colter, Joseph Briscoe and E. Burke Keeney, all former presidents, who acted as a nominating committee, have chosen the following from whom four directors to serve for two years are to be chosen for the **Cincinnati Coal Exchange**: R. P. Gillham, of the Campbell's Creek Coal Co., W. E. McElroy, of the M. A. Hanna Co.; Elmer Wierhake, of Castner, Curran & Bullitt; Robert Dickson, Raleigh Coal & Coke Co.; John Callahan, Southern Coal & Coke Co.; James Reilly, Queen City Coal Co.; William I. Donnelly, Logan & Kanawha Coal Co., and Fred Heitzman of the Old Ben Coal Corporation.



Production And the Market



Process of Readjustment in Coal Market Shows Regional Unevenness; Output Still Heavy

The process of readjustment in the bituminous coal markets of the United States is continuing, with nothing to indicate when a period of general stabilization will be reached. As has been the case since mid-November, the greatest unevenness is apparent in the Eastern sections, but the Atlantic seaboard can claim no monopoly in unsettlement. West of the Mississippi River trading is distinctly weak; there is a soft undertone to current developments in the Middle West. The Northwest alone enjoys an unshadowed activity.

Measured in terms of spot prices, efforts to clean up month-end accumulations and to replace concellations with new orders accelerated the rate of decline in current quotations. With the exception of pools 9, 10 and 11 at Baltimore and gas coals at Philadelphia, the general tendency in tidewater quotations was downward. West Virginia, Kentucky, Pennsylvania and Ohio coals also were weaker on westbound movement, although smokeless mine-run did make a gain in Cincinnati. A slight drop in Cambria marked the extent of the additional decline in the New England market.

Spot Average Drops 16c.

The losses enumerated and a general weakness in screenings in Illinois and Indiana brought *Coal Age* Index of spot bituminous prices on Dec. 6 to 226 and the weighted average price to $2.73. Compared with the figures on Nov. 29 this was a decline of 13 points and 16c. The high point for the year was reached on Nov. 8, when the index number was 299 and the weighted average price was $3.61.

Production still is on an unusually high basis. Although the total output for the week ended Nov. 27 fell to 13,409,000 net tons, the average daily production rose to 2,438,000 tons, as compared with 2,380,000 tons the preceding week, when weekly output—14,282,000 tons—shattered all records. Loadings the first two days of last week were slightly ahead of the loadings for the corresponding period in the week ended Nov. 27, suggesting that there is to be no sudden letdown in tonnage.

Gains Widely Distributed

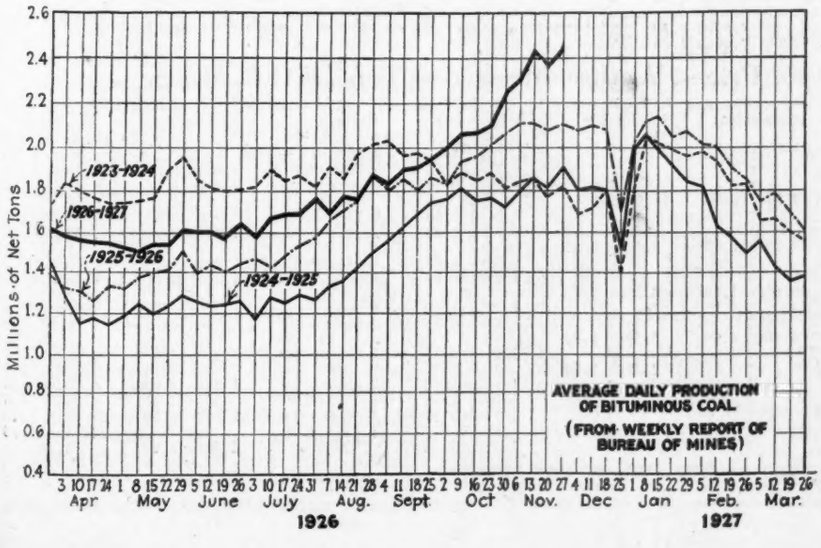
Analysis of production figures by states shows that the benefits of increased buying have been widely distributed. It is true, of course, that the greatest pressure for tonnage was put upon West Virginia and Kentucky—and those districts have been the first to feel the reaction. During the week ended Nov. 20, for example, West Virginia output slipped back 7 per cent and eastern Kentucky 3 per cent, while Ohio, Pennsylvania and Alabama gained 3 to 7 per cent, and Illinois, Indiana and western Kentucky output increased 17 per cent.

Distribution data show exports through the North Atlantic ports absorbing 956,244 net tons the week of Nov. 20 and 819,774 tons the following week. To Nov. 27 exports and foreign bunkers through Hampton Roads were 8,166,210 tons ahead of last year. Cargo shipments to New England during the same period fell 677,306 tons behind last year, but shipments to New England and eastern New York via the Hudson River gateways were approximately 250,000 tons greater than last year. Lake dumpings during the week ended Dec. 5 were 512,131 tons of cargo and 23,989 tons of vessel fuel.

Wages Present Problem

Non-union coal operators have a problem on their hands in the wage situation. The advances of Nov. 1 came into effect just about the time prices began to recede. Some producers in central Pennsylvania, northern West Virginia and the Cumberland field have returned to the 1917 levels. Majority sentiment among operators, however, is against such action and there are some who hope to maintain the higher rates through the rest of the coal year.

There has been no recovery in anthracite demand and production is still on a reduced basis. Output during the week ended Nov. 27 was estimated by the U. S. Bureau of Mines at 1,638,000 net tons. Cumulative production was over 15,000,000 tons more than at the end of November, 1925. That latter period, however, included three months in which tonnage was negligible, as compared with less than two months during the current year. Production to Nov. 27 was only 3,098,000 tons behind the cumulative total for the correspond-



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
Nov. 13	12,167,000	13,807,000
Nov. 20 (a)	12,596,000	14,282,000
Nov. 27 (b)	11,599,000	13,409,000
Daily average	2,188,000	2,438,000
Cal. yr. to date	465,785,000	515,500,000
Daily av. to date (c)	1,668,000	1,844,000

ANTHRACITE

Nov. 13	33,000	1,788,000
Nov. 20	46,000	1,760,000
Nov. 27 (b)	36,000	1,638,000
Cal. yr. to date (c)	61,474,000	76,777,000

BEEHIVE COKE

Nov. 13	295,000	202,000
Nov. 20 (a)	284,000	205,000
Nov. 27 (b)	292,000	198,000
Cal. yr. to date (c)	9,314,000	10,644,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

ing period in 1924, so that the present declining weekly rate is not surprising.

The Connellsville coke market is dull and prices are slipping. Byproduct ovens in Alabama and elsewhere find buying somewhat less active, but there have been no breaks in prices.

Midwestern Coals Firm

Illinois and Indiana producers appear to have the price situation on domestic sizes well in control. With buying easier and great quantities of Eastern coals offering at steadily falling figures, Illinois and Indiana abandoned all thought of further increasing prices on Dec. 1. Quotations, except on some Fifth Vein coal, however, were firmly held. Steam sizes were weaker; Fourth Vein Indiana and Mt. Olive screenings alone escaped declines.

Shipments of Eastern coal to the Chicago market on open billing have had a disastrous effect upon prices. Considerable high-volatile tonnage from eastern Kentucky and West Virginia has been moved on a distress basis. Some low-volatile mine-run also was in the bargain class, with sales as low as $2.65 to avoid demurrage. Prepared Pocahontas and New River was offered at $4.25@$4.75, with the market apathetic.

In the mining fields proper complaint is heard that accumulations of unsold loads of lump, egg and nut are becoming troublesome. Western Kentucky competition again is becoming very strong. In a number of cases, however, southern Illinois operators have closed down mines to lessen overproduction. This action, it is expected, will strengthen the tone of the market in steam coal and possibly permit a recovery in prices.

Mt. Olive Market Shrinks

The Mt. Olive district still enjoys good running time, but further shipments to Michigan have been blocked by the re-entry of eastern Kentucky and West Virginia coal into that territory. In the Duquoin-Jackson County area conditions are somewhat similar to those prevailing in Franklin, Saline and Williamson counties. The Standard district demand has dropped off and further weakness in prices is forecast. The St. Louis local market is distinctly slower, particularly on the domestic side.

Further reductions in prices and an increasing number of cancellations epitomized the course of the Kentucky market during the first week in December. Nominal quotations show western Kentucky 6-in. coal at $3.25; 4-in., $3; nut, $2.25@$2.65; egg, $2.65@$3; mine-run, $2; screenings, $1.25@$1.40. Shrewd buyers can find shippers ready to shade most of these figures. The top on eastern Kentucky block is about $4, with lump, egg and nut, $2.75@$3.25; mine-run, $2@$2.50, and slack, $1.50@$2.

The market at the Head of the Lakes continues to show no signs of weakness either in prices or demand. In fact, the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern	Market Quoted	Dec. 7 1925	Nov. 22 1926	Nov. 29 1926	Dec. 6 1926†
Smokeless lump	Columbus	$5.25	$5.25	$4.85	*$4.50@$5.00*
Smokeless mine run	Columbus	3.10	3.75	3.25	**3.25@ 3.75**
Smokeless screenings	Columbus	2.60	2.35	2.35	2.25@ 2.50
Smokeless lump	Chicago	4.50	5.50	4.75	*4.25@ 4.75*
Smokeless mine run	Chicago	2.35	3.75	3.75	*2.65@ 3.50*
Smokeless lump	Cincinnati	5.10	5.35	5.10	*4.50@ 5.25*
Smokeless mine run	Cincinnati	2.35	3.25	3.75	*3.50*
Smokeless screenings	Cincinnati	1.90	2.85	3.25	*3.00@ 3.25*
*Smokeless mine run	Boston	5.30	8.10	7.00	6.50@ 7.50
Clearfield mine run	Boston	1.85	2.50	2.75	2.50@ 3.00
Cambria mine run	Boston	2.15	2.85	3.35	*3.00@ 3.50*
Somerset mine run	Boston	2.00	2.60	3.00	2.75@ 3.25
Pool 1 (Navy Standard)	New York	2.95	4.00	4.00	*3.75@ 4.00*
Pool 1 (Navy Standard)	Philadelphia	2.95	3.50	3.50	*3.35@ 3.60*
Pool 1 (Navy Standard)	Baltimore	2.20	3.60	3.75	3.50@ 4.00
Pool 9 (Super. Low Vol.)	New York	2.30	3.25	3.00	*2.75@ 3.00*
Pool 9 (Super. Low Vol.)	Philadelphia	2.30	3.25	3.25	*3.05@ 3.30*
Pool 9 (Super. Low Vol.)	Baltimore	2.00	3.00	3.10	**3.25@ 3.50**
Pool 10 (H.Gr.Low Vol.)	New York	2.05	3.00	2.60	*2.40@ 2.75*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	2.05	3.00	3.00	*2.75@ 3.00*
Pool 10 (H.Gr.Low Vol.)	Baltimore	1.90	2.60	2.60	**2.50@ 2.85**
Pool 11 (Low Vol.)	New York	1.75	2.65	2.40	2.35@ 2.50
Pool 11 (Low Vol.)	Philadelphia	1.90	2.75	2.75	*2.55@ 2.70*
Pool 11 (Low Vol.)	Baltimore	1.65	2.35	2.35	**2.35@ 2.50**
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.55	2.45	2.25	2.00@ 2.50
Pool 54-64 (Gas and St.)	Philadelphia	1.60	2.40	2.40	**2.40@ 2.50**
Pool 54-64 (Gas and St.)	Baltimore	1.65	2.85	2.85	2.75@ 3.00
Pittsburgh sc'd gas	Pittsburgh	2.85	3.10	3.00	*2.65@ 2.75*
Pittsburgh gas mine run	Pittsburgh	2.35	2.60	2.55	*2.25@ 2.35*
Pittsburgh mine run (St.)	Pittsburgh	2.05	2.40	2.40	*2.15@ 2.25*
Pittsburgh slack (Gas)	Pittsburgh	1.55	2.00	2.05	*1.90@ 2.00*
Kanawha lump	Columbus	2.85	4.35	3.85	*3.00@ 3.50*
Kanawha mine run	Columbus	1.70	3.00	2.50	*2.00@ 2.25*
Kanawha screenings	Columbus	1.20	2.10	1.85	*1.50@ 1.75*
W. Va. lump	Cincinnati	2.60	4.75	4.10	*3.00@ 3.75*
W. Va. gas mine run	Cincinnati	1.65	2.75	2.60	2.50@ 2.75
W. Va. steam mine run	Cincinnati	1.50	2.75	2.60	*2.00@ 2.50*
W. Va. screenings	Cincinnati	1.15	2.10	2.10	*1.60@ 2.00*
Hocking lump	Columbus	2.85	4.25	3.35	*3.00@ 3.50*
Hocking mine run	Columbus	1.80	2.25	2.25	*2.00@ 2.25*
Hocking screenings	Columbus	1.35	1.85	1.85	1.75@ 2.00
Pitts. No. 8 lump	Cleveland	2.35	3.10	3.10	*2.25@ 3.50*
Pitts. No. 8 mine run	Cleveland	1.85	2.30	2.30	*1.95@ 2.10*
Pitts. No. 8 screenings	Cleveland	1.55	1.80	1.90	*1.55@ 1.65*

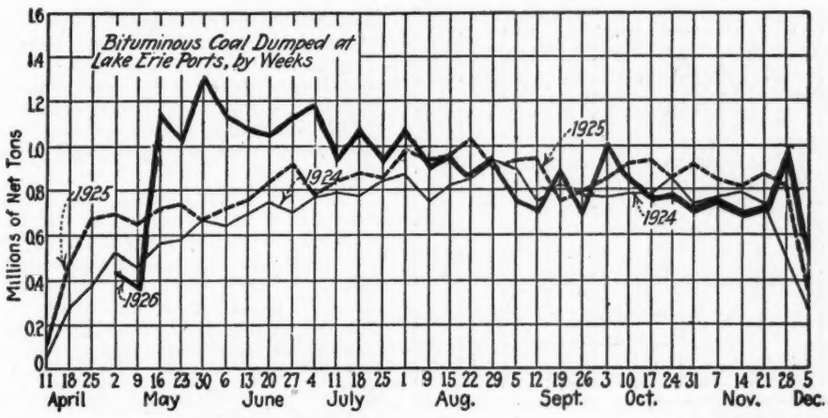
Midwest	Market Quoted	Dec. 7 1925	Nov. 22 1926	Nov. 29 1926	Dec. 6 1926†
Franklin, Ill. lump	Chicago	$3.50	$4.00	$4.00	$4.00
Franklin, Ill. mine run	Chicago	2.50	2.85	2.85	2.75@ 3.00
Franklin, Ill. screenings	Chicago	1.85	1.85	1.85	*1.50@ 2.00*
Central, Ill. lump	Chicago	3.00	3.50	3.50	3.25@ 3.75
Central, Ill. mine run	Chicago	2.30	2.60	2.60	2.50@ 2.75
Central, Ill. screenings	Chicago	1.40	1.50	1.60	*1.40@ 1.65*
Ind. 4th Vein lump	Chicago	3.10	4.00	4.00	4.00
Ind. 4th Vein mine run	Chicago	2.35	2.60	2.60	2.50@ 2.75
Ind. 4th Vein screenings	Chicago	1.85	1.85	1.85	1.75@ 2.00
Ind. 5th Vein lump	Chicago	2.50	3.50	3.50	*3.25@ 3.50*
Ind. 5th Vein mine run	Chicago	1.95	2.35	2.35	2.25@ 2.50
Ind. 5th Vein screenings	Chicago	1.40	1.45	1.60	*1.40@ 1.60*
Mt. Olive lump	St. Louis	2.85	3.10	3.10	3.00@ 3.25
Mt. Olive mine run	St. Louis	2.00	2.75	2.60	**2.75**
Mt. Olive screenings	St. Louis	1.75	1.60	1.60	1.50@ 1.75
Standard lump	St. Louis	2.40	2.65	2.85	2.75@ 3.00
Standard mine run	St. Louis	1.80	2.10	1.85	1.75@ 2.00
Standard screenings	St. Louis	.85	1.35	1.25	*1.00@ 1.15*
West Ky. block	Louisville	2.10	3.60	3.50	*3.00@ 3.25*
West Ky. mine run	Louisville	1.35	1.60	1.60	1.25@ 2.00
West Ky. screenings	Louisville	.85	1.30	1.30	*.90@ 1.40*
West Ky. block	Chicago	2.05	3.60	3.50	*3.00@ 3.25*
West Ky. mine run	Chicago	1.25	2.25	1.85	1.75@ 2.00
South and Southwest					
Big Seam lump	Birmingham	2.75	2.85	2.85	2.75@ 3.00
Big Seam mine run	Birmingham	2.10	2.10	2.10	2.00@ 2.25
Big Seam (washed)	Birmingham	2.30	2.35	2.35	*2.00@ 2.50*
S. E. Ky. block	Chicago	3.25	4.60	4.10	*3.25@ 3.75*
S. E. Ky. mine run	Chicago	2.15	2.85	2.60	*2.25@ 2.75*
S. E. Ky. block	Louisville	3.25	4.75	4.35	*3.25@ 4.00*
S. E. Ky. mine run	Louisville	1.60	2.55	2.40	*2.00@ 2.50*
S. E. Ky. screenings	Louisville	1.35	2.35	2.10	*1.50@ 2.00*
S. E. Ky. block	Cincinnati	3.25	4.75	4.10	*3.25@ 3.75*
S. E. Ky. mine run	Cincinnati	1.60	2.75	2.35	*2.00@ 2.50*
S. E. Ky. screenings	Cincinnati	1.20	2.10	2.10	*1.40@ 2.00*
Kansas lump	Kansas City	5.00	4.60	4.60	4.50@ 4.70
Kansas mine run	Kansas City	3.25	3.00	3.00	3.00
Kansas screenings	Kansas City	2.30	2.35	2.35	*2.25@ 2.35*

* Gross tons, f.o.b. vessel, Hampton Roads
† Advances over previous week shown in **heavy type**; declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	December 7, 1925 Independent	December 7, 1925 Company	November 29, 1926 Independent	November 29, 1926 Company	December 6, 1926† Independent	December 6, 1926† Company
Broken	New York	$2.34	.....	‡	.....	$8.50@$9.25	.....	$8.50@$9.25
Broken	Philadelphia	2.39	‡	‡	$9.25	8.50@ 9.15	$9.25	8.50@ 9.15
Egg	New York	2.34	‡	‡	8.75@ 9.25	8.75@ 9.25	*8.25@ 9.00*	8.75@ 9.25
Egg	Philadelphia	2.39	‡	‡	9.00@ 9.50	9.00@ 9.15	9.00@ 9.50	9.00@ 9.15
Egg	Chicago*	5.06	$9.50@10.00	$8.03@$8.25	8.26	8.13	8.26	8.13
Stove	New York	2.34	‡	‡	9.60@10.00	9.25@ 9.50	*9.50@ 9.85*	9.25@ 9.50
Stove	Philadelphia	2.39	‡	‡	9.75@10.20	9.35@ 9.50	9.75@10.20	9.35@ 9.50
Stove	Chicago*	5.06	10.00@11.00	8.48@ 8.80	8.71	8.58	8.71	8.58
Chestnut	New York	2.34	‡	‡	9.50@ 9.75	8.75@ 9.15	*9.25@ 9.50*	8.75@ 9.15
Chestnut	Philadelphia	2.39	‡	‡	9.25@10.00	9.00@ 9.15	9.25@10.00	9.00@ 9.15
Chestnut	Chicago*	5.06	10.00@11.00	8.50@ 8.75	8.48	8.53	8.48	8.53
Pea	New York	2.22	‡	‡	6.00@ 6.50	6.00@ 6.50	6.00@ 6.50	6.00@ 6.50
Pea	Philadelphia	2.14	‡	‡	6.30@ 6.75	6.00@ 6.50	6.30@ 6.75	**6.50**
Pea	Chicago*	4.79	5.50@ 6.00	5.50@ 6.00	6.03	6.10	6.03	6.10
Buckwheat No. 1	New York	2.22	‡	‡	2.25@ 2.60	2.50@ 3.50	2.25@ 2.60	2.50@ 3.50
Buckwheat No. 1	Philadelphia	2.14	‡	2.50@ 3.00	2.40@ 2.75	2.50@ 3.00	2.40@ 2.75	2.50@ 3.00
Rice	New York	2.22	‡	‡	1.50@ 1.85	2.00@ 2.25	**1.60@ 2.00**	2.00@ 2.25
Rice	Philadelphia	2.14	‡	‡	1.90@ 2.00	1.75@ 2.25	1.90@ 2.00	1.75@ 2.25
Barley	New York	2.22	‡	‡	1.10@ 1.50	1.50@ 1.75	**1.25@ 1.50**	1.50@ 1.75
Barley	Philadelphia	2.14	‡	‡	1.75	1.50@ 1.75	1.75	1.50@ 1.75
Birdseye	New York	2.22	‡	‡	1.25@ 1.60	2.00	**1.40@ 1.60**	2.00

*Net tons, f.o.b. mines. †Advances over previous week shown in **heavy type**; declines in *italics*.
‡Quotations withdrawn because of strike which started Sept. 1, 1925.



situation is stronger than for a considerable period back. There is little soliciting for business and, in some cases, new orders are frowned upon. Dock officials estimate that they will have little free coal to take care of customers who have been buying on the open market.

Northwest Buys Anthracite

Northwestern retailers have been busy booking orders for anthracite. Dock receipts of hard coal for the season probably will run to 1,200,000 tons, as against earlier estimates of 1,100,000. Prices are firm. In the bituminous division the only change is an advance to $10 in quotations on prepared smokeless at two of the docks; the other operations are holding to $9.25, but stocks are limited.

Weather at the Twin Cities has been sharp enough to induce consumers to give some thought to their coal bins, so that domestic consumption and buying have not been far from normal. Steam demand is moderate, but purchasing agents make no headway in their attempts to break down the price structure of the shippers. Prices on both all-rail Illinois and western Kentucky and on Eastern dock coals are firmly maintained. The Milwaukee situation is slightly easier.

Softness characterizes the market for domestic sizes in the Southwest and Intermountain territories. Southwestern operators are struggling with an accumulation of "no bills," with this situation specially bad in the Spadra section. Colorado also is afflicted, although in a lesser degree. Cancellations have been numerous. Utah has approximately 500 unbilled loads at the mines. In contrast to the rest of this section, however, the greatest price weakness is in slack, which is nominally $1.50, but actually $1.25.

Revise Wyoming-Colorado Prices

Effective Dec. 1, Colorado price were revised as follows: Walsenburg-Canon City domestic lump, $6; washed nut, $5; washed chestnut, $3; Trinidad coking lump, $4; nut, $3.75; fancy chestnut, $3.25; slack, $1.25@$1.75. Crested Butte bituminous lump,, $6; nut, $5; anthracite, $5@$9, according to size, Kemmerer-Rock Springs nut is up to $4, with lump $4.50 and slack, $1.75.

Deflation is still the order of the day in Cincinnati, with readustments most sharp in the floating tonnage of free coal. One of the leading factors in Logan County, West Virginia, has announced prices of $3.75 for 6-in. lump, $3.50 for 3-in., and $3.25 for egg for December delivery. Other high-volatile West Virginia lump can be had at $3@$3.25 and egg at $2.50@$2.75. Some Kentucky block still is held at $5, but most of the coal is down to $3.50@$3.75.

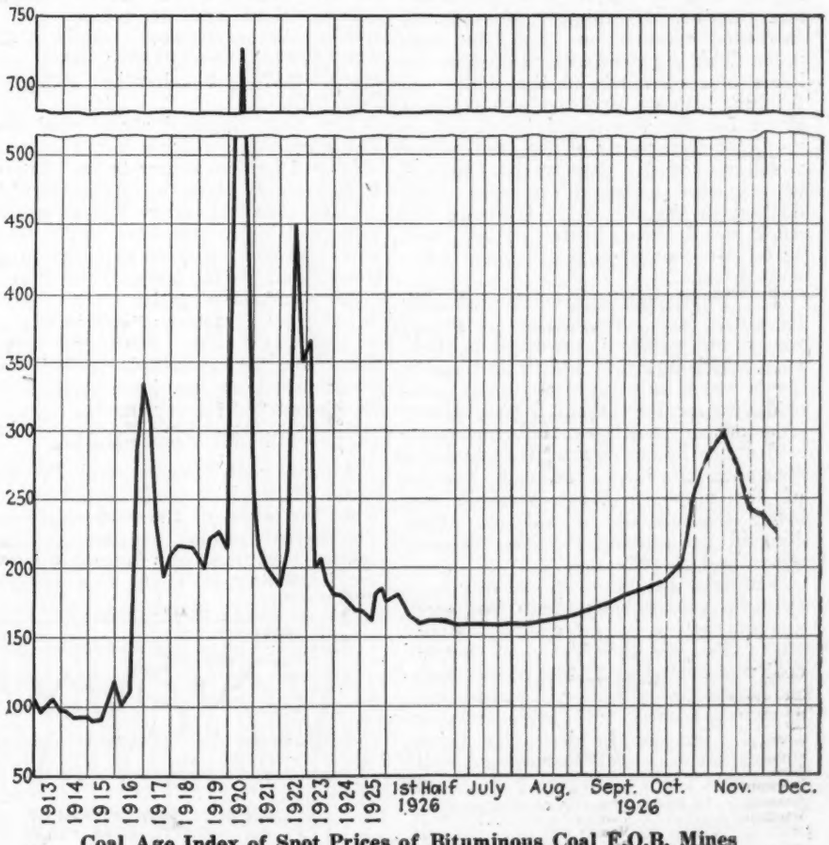
Mine-run prices are in a state of flux. The average range is $2@$2.50 on both steam and gas, but some West Virginia gas has sold up to $2.75. During the past week some southeastern Kentucky gas slack went at $1.90@$2, while one important Hazard shipper was offering slack at $1.40 "until our tonnage requirements are filled."

Smokeless Outlook Uncertain

The smokeless market also is uncertain. Most of the Pocahontas shippers ask $5 for lump and egg, $4.75@$5 for stove, $4.50 for nut and $3.50 for December delivery. A few days after these prices were established some of the New River operators quoted $4.50 on lump and egg. Retailers at Cincinnati are holding smokeless lump at $11 @$11.50; mine-run, $8@$8.50; bituminous lump, $8.50; slack, $5@$5.50.

A small increase in the number of loads moving through the Cincinnati gateway was reported last week. The total interchange was 14,643 cars, an increase of 739 loads over the preceding week. Included in the total were 625 cars en route to the lakes, as compared with 1,568 cars the preceding week. During the week there were 14,215 open-top cars routed to the mines. Movement of empties to the Louisville & Nashville increased 540 cars and to the Southern, 151 cars; the movement to the Chesapeake & Ohio decreased 571 cars.

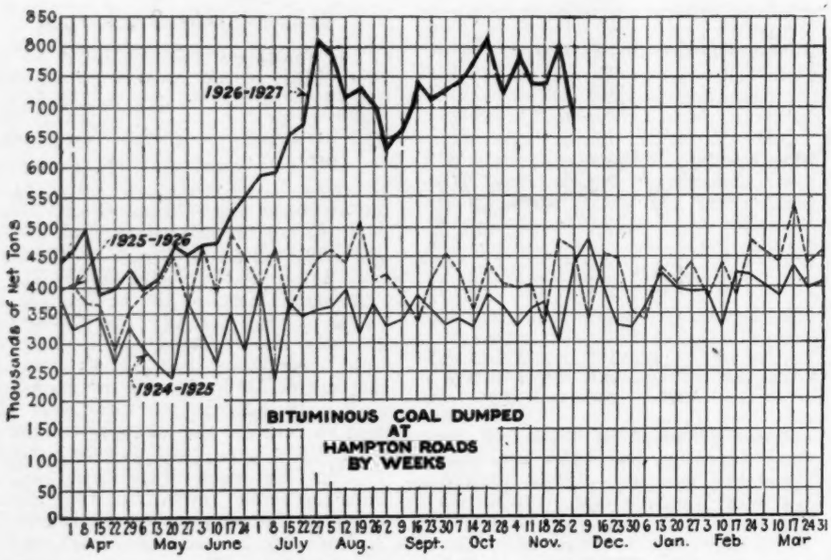
Both retail and industrial buyers at Columbus are trying to force the market on southern Ohio coals to lower levels by cutting orders to the minimum for immediate requirements. During recent weeks both classes have been able to increase their yard stocks. In addition, the closing of navigation



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926				1925	1924
	Dec. 6	Nov. 29	Nov. 22	Nov. 15	Dec. 7	Dec. 8
Index	226	239	243	275	184	171
Weighted average price	$2.72	$2.89	$2.94	$3.32	$2.22	$2.07

This diagram shows the relative, not the actual, price on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.


1926-1927
1925-1926
1924-1925
BITUMINOUS COAL DUMPED AT HAMPTON ROADS BY WEEKS
Thousands of Net Tons
Apr May June July Aug. Sept. Oct Nov. Dec. Jan. Feb Mar

means that increased quantities of West Virginia coal will be available. Production in southern Ohio has dropped to 60 per cent of capacity and many of the smaller mines again have been closed.

No Check to Ohio Decline

Northern Ohio prices took another dip last week and quotations are fast approaching the levels of the late summer months. Oversupply of coal and increased competition from the non-union fields deprived of an outlet to the lakes and of most of the additional foreign business are the explanations given for the downward trend. It is predicted that many of the Ohio mines which reopened a few weeks ago will be compelled to close down again. Production in the No. 8 field during the week ended Nov. 27 was 322,000 tons, or 55 per cent of capacity on a 5-day week basis.

The Pittsburgh district is suffering from the heavy production of recent weeks and renewed consumer indifference. Although prices have declined to levels which barely permit union operations to escape without a loss, buyers hold off in the hope that non-union scales may be cut again. It is rumored that such cuts have been made at some of the northern West Virginia and lower Connellsville operations. Spot demand is confined to the choicest steam and gas offerings.

The price pendulum in central Pennsylvania swung back again last week and quotations on all grades dropped 15 to 25c. In the Clearfield district, coal was quoted at $2.10@$2.25. Open-shop operators in that section announced a return to the 1917 scale, effective Dec. 1. Despite the decline in prices, production was well maintained, with shipments for Thanksgiving Day week totaling 18,886 cars. No complaint is heard of car shortage.

Buffalo Back in Groove

Buffalo bituminous trade is back in its groove, but the volume of business is somewhat above that of the pre-flurry period. Extra buying by Canadian consumers who feared a Dominion railway strike is one explanation given for the increased volume of trade. Prices, except on Allegheny Valley coal, which are up 5 to 10c., dropped 25 to 75c. last week. Fairmont lump was $2.25@$2.50; mine-run, $2@$2.25; slack, $1.60@$1.75; Youghiogheny gas lump, $3@$3.25; slack, $2@$2.25; Pittsburgh and No. 8 steam lump, $2.50 @$2.75; slack, $1.70@$1.85.

The local Toronto market has been quiet, with considerable falling off in demand. Many householders have their cellars filled and industrial call is feeble. Anthracite stove retails at $16; nut, $15.50; pea, $12.75; bituminous lump, $9.75; Pocahontas, $12@$13; coke, $13.

The New England steam coal market is gradually sinking into what probably will be the winter basis. Inquiry is light; only those in urgent need for January are inclined to buy at present prices. The spot market at Hampton Roads ranges from $6.50 to $7.50 per gross ton, f.o.b. piers, according to quality and the situation of the individual shipper. On cars at Boston there is no material change. The larger factors have been trying to hold to $8.75, but some quotations are down to $8.50 and $8.60, and $8.25 is predicted.

All-Rail Market Holds

All-rail coal from central Pennsylvania shows little substantial change from the levels of the preceding week. The better grades continue in good demand, but those less favorably known are beginning to meet with sluggish inquiry. Some "bargain" offers are reported, but there is no great quantity of good coal available at worth-while concessions from the open market. Most of the spread in prices arises out of the necessity of one or the other party to the transaction and this spread is narrowing.

The New York market has not yet recovered from the effects of the British strike settlement. Spot buying has been cut to the bone and shippers find it difficult to keep their surplus supplies moving. Producers of top grade coal, however, still have considerable unfilled tonnage on their books. Quotations are uneven. There is some distress coal at the local piers offered at less than current market prices.

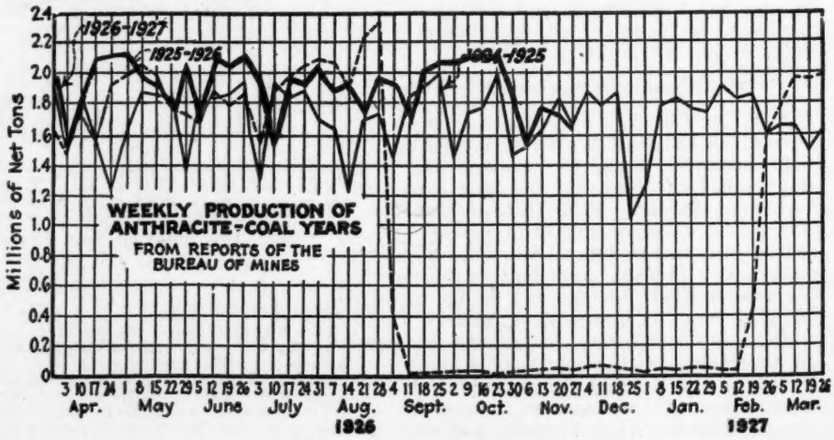
Philadelphia, too, is going through a stabilization process, but the procedure is less painful than at New York. Home buying is less feverish, but the volume of coal moving is heavy. Railroads are trying to find soft spots in the market, but to date few shippers are willing to meet the carriers' ideas on price. Tidewater business holds up and future inquiries continue to come into the market. The general run of spot prices is easier.

Export Trade Holds Up

Export loading still dominates the Baltimore market. Dumpings for foreign shipment last month were well over 1,000,000 gross tons and new charters are being made daily. All the piers are busy, with many vessels waiting astream for berths. In contrast to the situation at the more northerly ports and at Hampton Roads, prices at Baltimore were stronger last week and increases were registered in the level of quotations on pools 9, 10 and 11.

Demand for steam grades in the Birmingham district showed further weakness last week. Inquiry, except on certain choice grades which are in short supply, was less active. Consumers generally are displaying less anxiety over forward supplies because the abnormal Eastern demand has disappeared and many plants plan to close down over the holidays. Domestic buying, now largely confined to regular territory, is heavy. Coke is weaker.

December quotations are: Big Seam mine-run, $2@$2.25; washed, $2@$2.50; lump, $2.75@$3; Carbon Hill mine-run, $2.25@$2.50; washed, $2.25@$2.75; lump, $3.50@$3.75; Cahaba mine-run and washed, $2.50@$2.75; lump, $5@



Car Loadings and Supply

	Cars Loaded: All Cars	Cars Loaded: Coal Cars
Week ended Nov. 27, 1926	942,792	227,936
Week ended Nov. 20, 1926	1,078,812	242,013
Week ended Nov. 28, 1925	923,213	172,279
Week ended Nov. 21, 1925	1,057,674	189,182

	Surplus Cars: All Cars	Surplus Cars: Coal Cars	Car Shortages: All Cars	Car Shortages: Coal Cars
Nov. 23, 1926	115,734	8,722	.....	No report
Nov. 15, 1926	98,704	11,321	.....	No report
Nov. 22, 1925	124,818	37,007	.....	.....

$6.50; Black Creek washed, $3@$3.40; lump, $5@$6; Corona mine-run, $2.75; washed $3; lump, $4; Pratt mine-run and washed, $2.25@$2.50; Montevallo-Straven lump, $5.75; Dogwood lump, $6; Aldrich lump, $6.75@$7.

Anthracite Demand Weakens

The anthracite market at New York is slipping. Buyers are placing few new orders and are finding excuses to refuse cars not delivered on time. Independent shippers are having a hard time moving tonnage. Nut is dragging behind stove and egg is troublesome. Independent quotations on domestic sizes are off 10 to 50c Prices on rice and barley, on the other hand, are slightly stronger.

Aside from an increase from $6 to $6.50 in the price on pea by one shipper, there were no changes in company circulars on the first of the month at Philadelphia. Independent figures, too, nominally are unchanged although quiet concessions are made from time to time to move tonnage. As a whole the domestic market is backward and the week-end cold spell came too late to have any effect upon buying. Steam sizes continue in good demand, but buckwheat is weaker.

Hard-coal trade at Baltimore has settled down to "a weather proposition." Supplies are ample for all current demands. Until late last week the thermometer was not such as to quicken buying interest in the Buffalo local market. The lake trade is practically over although one company may load a few additional cargoes. During the week ended Dec. 2 shipments from Buffalo were 49,200 tons, of which 30,200 tons were cleared for Milwaukee and 19,000 tons for Duluth and Superior.

Dullness Grips Connellsville

All grades of Connellsville coke are dull. Spot buyers criticize the action of the independent ovens in the recent wage advance, but the larger operators are opposed to any reduction at this time. Good quality heating coke is around $3.50; standard foundry has slipped down to $4, against $4.25@$4.75; spot furnace has declined 50c. to $5@$5.50. Nothing has yet been done on first-quarter contracts.

Beehive output in the Connellsville and Lower Connellsville region during the week ended Nov. 27 was 142,360 tons, acording to the Connellsville *Courier*. Furnace-oven production was 69,700 tons, an increase of 2,020 tons when compared with the output the week preceding. Merchant-oven production was 72,660 tons, an increase of 340 tons.

Men Employed and Days Worked in Pennsylvania Anthracite Region in 1925

Region	Average Number of Men Employed: Underground: Miners, etc.	Underground: Other	Underground: Total Underground	Total	Average Number Days Worked
LEHIGH:	Surface				
Breaker product	5,838	8,372	5,360	13,732	19,570	188
Washery product	(a)	.....	.....	.....	(a)	(a)
Dredge product	9	.....	.....	.....	9	145
	5,847	8,372	5,360	13,732	19,579	187
SCHUYLKILL:						
Breaker product	14,710	22,770	12,503	35,273	49,983	177
Washery product	420	.....	.....	.....	420	124
Dredge product	342	.....	.....	.....	342	195
	15,472	22,770	12,503	35,273	50,745	177
WYOMING:						
Breaker product	17,933	47,351	23,797	71,148	89,081	184
Washery product	311	.....	.....	.....	311	133
Dredge product	7	.....	.....	.....	7	185
	18,251	47,351	23,797	71,148	89,399	184
SULLIVAN COUNTY:						
Breaker product	174	280	135	415	589	97
Total breaker product	(b)38,655	78,773	41,795	120,568	159,223	182
Total Washery product	731	.....	.....	.....	731	128
Total Dredge Product	358	.....	.....	.....	358	193
Grand total	39,744	78,773	41,795	120,568	160,312	182

a Included in breaker product. b Includes a comparatively small number of washery employees who could not be separated from breaker employees.

Output, Shipments and Value of Anthracite in 1925 By Counties

County	Shipments: Gross Tons	Shipments: Value	Total Production: Gross Tons	Total Production: Value
Berks (a)	20,000	$16,000	64,000	$96,000
Carbon	1,554,000	9,109,000	1,709,000	9,645,000
Columbia	294,000	1,752,000	368,000	1,868,000
Dauphin	597,000	3,533,000	967,000	3,975,000
Lackawanna	11,169,000	73,977,000	12,238,000	77,441,000
Luzerne	18,904,000	130,189,000	21,754,000	138,129,000
Northumberland	3,883,000	22,618,000	4,574,000	23,885,000
Schuylkill	11,031,000	66,885,000	12,907,000	69,991,000
Sullivan	105,000	574,000	127,000	642,000
Cumberland (a), Lancaster (a) and York (a)	92,000	114,000	105,000	121,000
Montour (a), Northampton (a) and Wayne	353,000	1,813,000	381,000	1,872,000
Total	48,007,000	$310,580,000	55,194,000	$327,665,000

a Dredge product only.

Production of Anthracite in 1925 by Fields

(In Gross Tons)

Field	Breakers	Washeries	Dredges	Total
Eastern middle	4,909,000	.....	.....	4,909,000
Western middle	10,633,000	334,000	248,000	11,215,000
Northern	30,057,000	359,000	78,000	30,494,000
Southern	7,639,000	229,000	51,000	8,449,000
Sullivan county	127,000	.....	.....	127,000
Total	53,365,000	922,000	907,000	55,194,000

Compiled by U. S. Bureau of Mines.

Court Denies Valuation Boost For Hard-Coal Land Tax

Anthracite operators on Nov. 26 won a three-year legal battle which will save them millions of dollars. The victory was in the form of a final decree in a coal-tax valuation suit which was instituted by the City of Scranton. The decree, handed down by Judge A. T. Searle, of Honesdale, Pa., specially presiding, refused the city the right to boost the coal valuation for taxation purposes from $320 to $800 a foot-acre.

The court held that $400 is a fair valuation on a foot-acre of coal for assessment purposes and further decreed that since city property for city and school tax purposes is assessed at but 80 per cent of its actual value, the coal owners should pay on the same basis, or $320 per foot-acre.

The decision is final, it being agreed by the parties at issue that no appeal would be taken.

The Lackawanna County valuation on coal lands was fixed at $400 per foot-acre by Judge E. C. Newcomb in a suit brought by the county commissioners some years ago and the assessment was fixed at 80 per cent of this figure. The latest decree winds up the last of the litigation in the upper anthracite region and in a manner standardizes the taxation valuation of coal lands.

During the course of the litigation, which began in the fall of 1923, when Mayor John Durkan's board of assessors announced the increase, the coal companies paid but a part of their taxes, paying on a $200 per foot-acre valuation, which they fixed themselves. As a result, $300,000 in unpaid city taxes will now be paid over to the municipality by the various coal companies operating here.

Judge Searle also has ruled that the companies need not pay penalties on taxes that have been standing for several years.

Foreign Market And Export News

Continental Europe Prepares For Strike End

The end of the British strike does not discourage German producers, according to cabled reports from Berlin. The Germans have orders for several months ahead for shipments to markets normally served by Great Britain. October production was a record breaker with an output of 13,500,000 metric tons. The Ruhr mines produced 11,900,000 tons. Lignite output was 13,200,000 tons.

During the same month Germany exported 3,400,000 tons and imported 156,000 tons of coal. Ruhr coal stocks are practically cleaned up, but the district still has approximately 1,800,000 tons of coke on hand.

France imported 1,611,000 tons of coal during October. Higher prices in the Ruhr are strengthening the French market, which does not expect to benefit from the termination of the British strike before the beginning of next year. The Italian market has broken badly on reports of the British settlement. Prices dropped from $25 to $18 per ton in less than a fortnight and $14 was offered for December deliveries.

The Belgian situation is growing more serious with the continued absence of the customary British supplies. Belgian mines are working to capacity and there is talk of lengthening the time worked. Rigid economies have become necessary to conserve fuel.

Weekly Exports Drop

Exports of bituminous coal from five Atlantic ports of the United States during the week ended Nov. 27 dropped to 731,941 gross tons, according to figures collected by the Department of Commerce. Exports by ports during the three weeks ended Nov. 27 were:

Port	Week Ended Nov. 13 Gross Tons	Week Ended Nov. 20 Gross Tons	Week Ended Nov. 27 Gross Tons
New York...	3,500	14,255	.....
Philadelphia	124,035	170,564	124,056
Baltimore...	177,335	329,183	252,507
Norfolk.....	315,898	315,740	341,260
Charleston..	11,965	24,046	14,116
Total.....	632,733	853,788	731,941

Anglo-German Agreement in Sight

Recent news articles appearing in the German press quote Sir Alfred Mond as anticipating an Anglo-German coal agreement to be concluded probably next spring. British mining interests are stated to be not only interested in an agreement on coal prices, but also on coal byproducts.

Sir Alfred Mond's statement has brought about considerable comment in German coal circles, it is stated. A precedent is found in the operation in Germany of the so-called Mont Cenis fixation process, synthesizing ammonia over a highly effective catalyst at temperatures and pressures that are said to be more advantageous than those operated by the Haber-Bosch process. The Mont Cenis process is otherwise known as the Mond process.

Export Clearances, Week Ended Dec. 2

FROM HAMPTON ROADS

	Tons
For United Kingdom:	
Br. Str. Silton Hall	8,760
J.-S. Str. Mrav	5,871
Grk. Str. Ioannis	6,772
Br. Str. Holbein	6,179
Br. Str. Trabian Prince	6,932
Br. Str. Gambia River	6,973
Nor. Str. Fragner	8,066
Du. Str. Kinderdijk	5,615
Br. Str. Aviemare	5,447
Br. Str. Mackworn	6,099
Br. Str. Maryland	6,161
Dan. Str. Norden	4,103
Du. Str. Eibergen	7,219
Du. Str. Drienbergen	8,203
Br. Str. Rio Azul	6,635
Br. Str. Magellan	8,805
Nor. Str. Landaas	6,755
Grk. Str. Georgios M. Embiricos	9,920
Nor. Str. Thrier	7,397
Br. Str. Dunstaffnage	6,767
Br. Str. Argylshire	8,800
Br. Str. Copenhagen	6,658
For Ireland:	
Swed. Str. Consul Olison, for Queenstown	4,105
Nor. Str. Hassel, for Queenstown	5,524
For Cuba:	
Amer. Schr. John C. Hildebrand, for Cienfuegos	1,483
For Brazil.:	
Fr. Str. Alsace II, for Rio	6,140
Amer. Str. Atlantic, for Rio	7,288
Br. Str. Bronte, for Rio	5,407
Amer. Str. Mundelta, for Rio	6,558
For Italy:	
Ital. Str. Laura, for Venice	3,153
Ital. Str. Campania, for Genoa	6,823
For Denmark:	
Dan. Str. Svend Pil, for Copenhagen	2,619
For Uruguay:	
Grk. Str. Atlantic, for Montevideo	6,991
For France:	
Fr. Str. P. L. M. 15, for Rouen	5,196
For Danish West Indies:	
Dan. Str. Nordhavet, for Curacao	4,660
For England:	
Br. Str. Blairholm, for London	4,133
For British West Indies:	
Swed. Str. Roslagen, for Port of Spain	2,815
Swed. Str. Eda, for Bridgetown	2,579
For Egypt:	
Br. Str. Antilochus, for Port Said	2,940
Ital. Str. Capo Vado, for Port Said.	5,825
For Gibraltar:	
Amer. Str. Agwidale	5,953
Br. Str. Uskmoor	3,344
For Portugal:	
Port. Str. Inhambane, for Lisbon	8,430
Du. Str. Zaandijk, for Luxoes	5,193
For Argentine:	
Br. Str. Tasmanian Transport, for Buenos Aires	6,093

FROM BALTIMORE

For England (for Queenstown, Ireland, for orders, unless otherwise specified):	
Br. Str. Roath	6,369
Br. Str. Perin, for Lands End	8,648
Br. Str. Nelens	6,991
Br. Str. King Edward	6,478
Fr. Str. Capt. Joseph Plisson, for Lands End	4,142
Br. Str. Quebec City	7,588
Br. Str. Archmel	6,341
Br. Str. Elswick Park	7,155
Br. Str. Mainova	8,906
Br. Str. Hartfield	6,932
Br. Str. Ethelfreda	7,032
Br. Str. Peebles	7,478
Grk. Str. Agios Giorgios	6,509
Am. Str. Henry D. Whiton	5,999
Ital. Str. Carla	6,724
Ital. Str. Col di Lana	7,366
Br. Str. Shandon, for Beckton	4,525
Br. Str. Valdura	8,068
Br. Str. Anglo Peruvian	8,615
Br. Str. Silksworth	7,363
Ital. Str. Ulisse, for Lands End for orders	8,797
Br. Str. Grainton	8,453
Br. Str. Anglo Indian	8,524
For Ireland:	
Br. Str. Oehringen, for Belfast	5,029
Nor. Str. Hercules, for Dublin	5,729
Br. Str. Cairnhill, for Cork	5,864
Br. Str. Blairatholl, for Dublin	5,039
Br. Str. Levnet, for Dublin	4,683
Dut. Str. Zwarte Zee, for Cork	4,802
Br. Str. Blairbeg, for Belfast	4,192
For Italy:	
Am. Str. Edwin Christensen, for Savona	6,966
Ital. Str. Ansaldo San Giorgio, for Genoa	6,781
Ital. Str. Apolda, for Genoa	5,728
Ital. Str. Sursum Corda, for Savona	7,678
Ital. Str. Ansaldo Ottova, for Savona	6,352
For France:	
Nor. Str. Otta, for St. Nazaire	4,503
Nor. Str. Orla, for Havre	5,789
Fr. Str. P. L. M. 14, for Rouen	5,279
For Argentine:	
Grk. Str. Mikelis, for Buenos Aires	4,200
Br. Str. American Transport, for Buenos Aires	6,496
For Cape Verde Island:	
Br. Str. Antonio, for St. Vincent	7,038
For Azores:	
Nor. Str. Dea, for Harta Fayal	3,561
For Scotland:	
Br. Str. Manchester Citizen, for Glasgow	7,767
For Algeria:	
Br. Str. Zonkadra, for Algiers	5,107
For Portugese West Africa:	
Dan. Str. Peter Maersk, for St. Paul Leanda	2,917
For Uruguay:	
Br. Str. Trevaylor, for Montevideo	5,916
For Denmark:	
Ger. Str. Venus, for Copenhagen	3,404

FROM PHILADELPHIA

For United Kingdom:	
Br. Strs. Davisian, Domingo de Larrinaga, Portfield, European, Manchester City, Heronspool, Clayton and Tregantle, Grk. Str. Makis, Ital. Str. Nordico, Bel. Str. Nervier	——
For Brazil:	
Br. Strs. Natia, Iamington and Radnor, for Rio	——
Br. Str. Uba, for Pernambuco	——
For Argentina:	
Br. Str. Ravenshoe, for Buenos Aires	——
For Turkey:	
Grk. Str. Diamitrios M. Diacakie, for Constantinople	——
For Greece:	
Nor. Str. Ascot, for Piraeus	——
Br. Str. Heathpark	——
For Gibraltar:	
Ital. Str. Basso Piave	——
For Jamaica:	
Am. Str. Leviso, for Kingston	——
For France:	
Ital. Str. Cor Jesu, for Havre	——
Ital. Str. Atlantico, for Marseilles	——
For Italy:	
Ital. Str. Carco, for Leghorn	——
For Madeira Islands:	
Br. Str. Commercial Traveller, for Funchal	——

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Nov. 25	Dec. 2
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week	319,599	298,528
Virginian Piers, Sewalls Pt.:		
Tons dumped for week	192,714	114,182
C. & O. Piers, Newport News:		
Tons dumped for week	207,703	187,067

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Nov. 25	Dec. 2†
Pool 1, New York	$6.50@$7.00	*$6.50@$6.75*
Pool 9, New York	5.75@ 6.25	**6.00@ 6.25**
Pool 10, New York	5.50@ 5.75	**5.50@ 6.00**
Pool 11, New York	5.25@ 5.50	*5.00@ 5.25*
Pool 9, Philadelphia	6.70@ 6.90	*6.00@ 6.25*
Pool 10, Philadelphia	6.55@ 6.75	*5.65@ 5.95*
Pool 11, Philadelphia	6.15@ 6.35	*5.35@ 5.60*
Pool 1, Hamp. Roads	6.50@ 6.75	6.50@ 6.75
Pool 2, Hamp. Roads	6.00	**6.25@ 6.35**
Pool 3, Hamp. Roads	5.30@ 5.45	**5.50@ 5.75**
Pools 6-6-7, Hamp. Rds.	6.00@ 6.25	*5.50@ 5.75*

BUNKERS

Pool 1, New York	$6.75@$7.25	*$6.75@$7.00*
Pool 9, New York	6.00@ 6.50	**6.25@ 6.50**
Pool 10, New York	5.75@ 6.00	**5.75@ 6.25**
Pool 11, New York	5.50@ 5.75	*5.25@ 5.50*
Pool 9, Philadelphia	7.00@ 7.15	*6.25@ 6.50*
Pool 10, Philadelphia	6.80@ 7.00	*5.90@ 6.20*
Pool 11, Philadelphia	6.40@ 6.60	*5.60@ 5.85*
Pool 1, Hamp. Roads	6.75	6.75
Pool 2, Hamp. Roads	6.25	**6.35**
Pools 5-6-7, Hamp. Rds.	6.25	*5.75*

† Advances over previous week shown in **heavy type**: declines in *italics*.

Coming Meetings

Coal Operators' Association of the Thick Vein Freeport Seam of Pennsylvania. Annual meeting, Dec. 14, at Pittsburgh, Pa. Secretary, C. W. Gibbs, Pittsburgh, Pa.

Monongahela Coal Association. Annual meeting, Jan. 13, at Morgantown, W. Va. Secretary, D. H. Pape, Morgantown, W. Va.

American Society of Civil Engineers. Annual meeting, Jan. 19-21, 1927, at Engineering Societies Bldg., New York City. Secretary, George T. Seabury, 29 West 39th St., New York City.

American Wood Preservers' Association. Annual meeting, Jan. 25-27, 1927, at Nashville, Tenn. Secretary, E. J. Stocking, 111 W. Washington St., Chicago, Ill.

Philadelphia Coal Club. Annual meeting, Jan. 27, 1927, at the Bellevue-Stratford Hotel, Philadelphia, Pa. Secretary, Charles K. Scull, Philadelphia, Pa.

American Institute of Electrical Engineers. Midwinter convention, Feb. 7-10, Engineering Societies Bldg., New York. Secretary, F. L. Hutchinson, 33 W. 39th St., New York City.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 14-17, 1927, Engineering Societies Bldg., New York City. Secretary, H. Foster Bain, 29 West 39th St., New York City.

Second Midwest Power Conference, under the auspices of the American Institute of Electrical Engineers, American Society of Mechanical Engineers, American Institute of Mining and Mettallurgical Engineers, National Electric Light Association, Western Society of Engineers and National Safety Council, Feb. 15-18, 1927, at the Coliseum, Chicago, Ill. Secretary, G. E. Pfisterer, 53 West Jackson Blvd., Chicago, Ill.

New Companies

The Barrenwood Coal Co., Wheeling, W. Va., has been incorporated by George A. Blackford, Court Theater Building, Wheeling.

The Twin States Mining Co. has been incorporated at Terre Haute, Ind. The incorporators are Charles Crawford, attorney, of Terre Haute, and George D. Yeazel and James Costin, of Indianapolis. Costin is associated with the Mid-West Fuel Co. and Yeazel is with the White Ash Coal Co. The company already has agreements to take over property valued at $50,000 for exploitation of coal rights. There are 2,500 shares of common stock, nominally valued at $10 a share, and 500 of preferred stock of a par value of $100.

The Burge Coal Co., Urland, W. Va., with a capital of $25,000, has been incorporated by J. A. Burge and H. G. Mounts.

The Warner Block Coal Co., Charleston, W. Va., having a capital of $25,000, has been incorporated by John N. Walker and N. L. McClure.

New Equipment

Remote Control Equipment For Motors Favored

Remote control of electric motors is rapidly finding favor in the coal-mining industry, because this method has so far proven satisfactory. A number of improved push-button stations, for use with various types of industrial magnetic control, have been introduced recently by the General Electric Co., Schenectady, N. Y. These cover various fields of application, each being designed to meet some special set of circumstances.

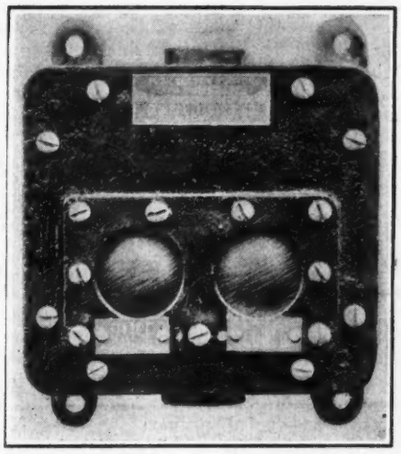


Fig. 1—This Station Water-Tight

Designed to make operation safer for life and equipment where conditions are such that they demand care in control equipment of this type.

A standard dust- and water-tight push button station of particular value in screening plants, tipples, coke plants, etc., is embodied in a design bearing the designations BS-8-E and BS-4-AA, "Stop" and "Run—Stop" respectively. These have silver contacts inclosed in a malleable iron box with a leather diaphragm between the buttons and holes in the cover, the pressure on the leather diaphragm operating the switch.

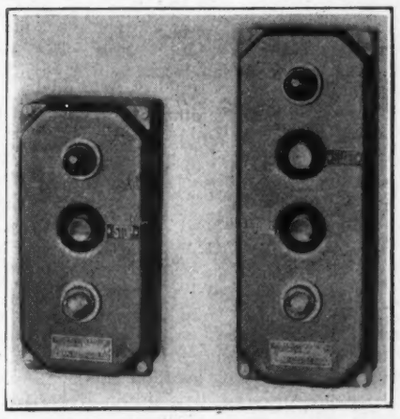


Fig. 2—Provided with Indicating Lamps

A wide range of control of operations that fall within their capacities is afforded by these push button stations. Eighteen-volt resistance type lamps are used.

Where it is necessary to have contacts immersed in oil to minimize the danger of explosions or to prevent corrosion of the copper contacts, the "Stop" and "Start—Stop" stations bearing the designations BS-11-CL and BS-12-DK are recommended. These are specially designed to allow easy removal of the tank for filling with oil.

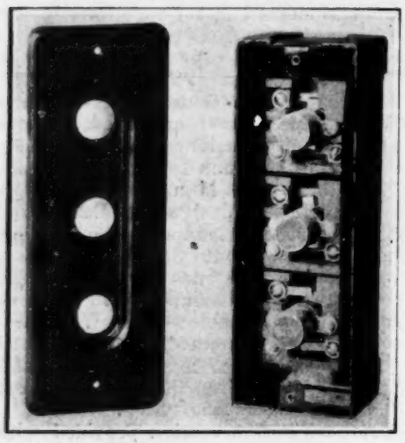
Another form is a standard three-button station designated BS-73 and developed as an inexpensive device for light duty without plugging. This is recommended for such service as valve control, small hoists and the like. Three forms are available: (A) With buttons marked "Forward," "Reverse" and "Stop"; (B) with markings "Raise," "Lower" and "Stop," and (C) marked "Open," "Close" and "Stop."

A push-button station provided with protected indicating lamp is covered by types BS-11-DP, BS-12-HV and BS-12-HW. Eighteen-volt, resistance-type lamps are used, instead of the bull's-eye, 115-volt type, improved protection being provided by the resistor which always limits the control current to a safe value for the contacts. The three types cover "Stop," "Start—Stop" and "Fast—Slow" markings and are standardized for 125 volts, although stations for any other common voltage can be supplied.

Fig. 3—Increases Safety

Push button stations may have their contacts immersed in oil where it is necessary to minimize the danger of explosions due to flashing at the contacts. The tank is easily removed for inspection of contacts or refilling.

An improved line of stations for back-off-panel mounting where the front is to be flush with the front of the base has also been announced. Examples are the BS-11-DG ("Stop") and BS-12-FR ("Start—Stop") forms, designed for mounting on any base between 1 and 1¼ in. thick. In installing the new stations, a cover can be removed after mounting in order that connections can be made as desired.



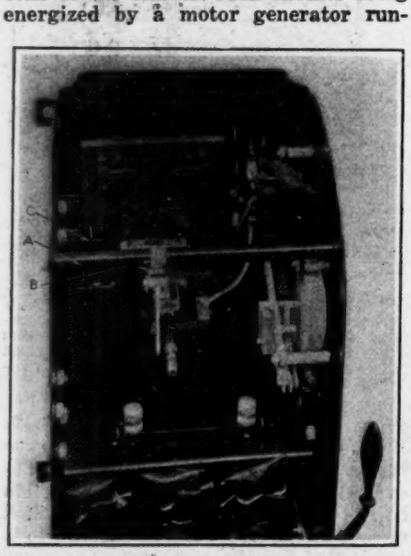
For Mounting on Switchboards

This type of station is for back-of-panel mounting where the front is to be flush with the base. The cover can be removed after mounting so that connections can be made as desired.

Prevents Motors Stopping on Momentary Interruptions

A time-delay attachment designed for use with hand starting compensators to provide undervoltage protection during brief disturbances in industrial power circuits has been designed by the General Electric Co., Schenectady, N. Y. This is now available for the coal-mining industry.

Many establishments, utilizing a large number of motors, run separate circuits to energize the undervoltage coils of the starter. such circuits being energized by a motor generator running on its own momentum for some time after the failure of power. The new attachment was developed to meet the demand for a time-delay undervoltage release, resulting from the larger number of potential dips caused by the increased use of such power systems, and the wider use of undervoltage protection on motor starters. The attachment bears the designation CR-2820-1062.



May be Mounted on Compensator

This time-delay attachment may be mounted on a hand starting compensator in the same supporting holes as are used for the standard undervoltage release.

Time delay is accomplished by a falling solenoid plunger whose downward movement is retarded by a flywheel. A rack, which turns the flywheel by means of a pinion on its shaft, is fastened to the solenoid plunger. On the downward movement of the plunger, the flywheel is caused to revolve but the parts are so designed that the upward movement of the plunger disengages the teeth of the rack from the pinion, permitting an instantaneous movement. The time delay is about 1½ sec. and if power returns in less than that time the starting compensator is not tripped.

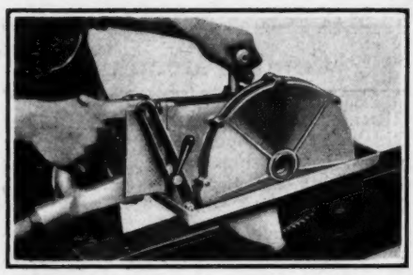
Saves Time in Field as Well As in Shop

The "Alta" portable electric hand saw shown in the accompanying illustration is manufactured by the Wappat Gear Works, Meade St. at Braddock Ave., Pittsburgh, Pa. It is used to saw lumber on construction jobs and in industrial plants. This saw is equipped with a powerful universal motor for use on either direct or alternating current and will cross-cut or rip boards up to and including 3 in. in thickness. Special saw blades can be furnished for cutting wood, fibre, bakelite, hard rubber, stone, steel and many other materials.

Five saw blades are furnished unless otherwise specified: Two 8-in. combination saws, marked No. 1, for cross-cutting and occasional ripping; one 9-in. combination saw, marked No. 2, for the same purpose; one 8-in. rip saw, marked No. 3, and one 9-in. rip saw, marked No. 4. The motor is rated at ¾ hp. and is mounted upon Timken roller bearings, as is the worm-gear drive to the saw spindle. Regular equipment includes 15 ft. of heavy-duty rubber-covered wire and an armored separable attachment plug.

This device is equipped with a telescoping guard that completely incloses the blade and automatically opens only when the saw is pushed into the material, closing again as soon as the cut is completed. This guard affords maximum safety against accident and protects the blade from damage as well. A wide carrying shoe supports the weight of the tool and prevents tipping, so that the chief effort of the operator is in guiding the saw. This shoe is adjustable so that it is possible to set the saw for any depth of cut such as would be required when cutting out sections of flooring and the like. The presence of this shoe insures square cuts and prevents straining the saw blade, thus eliminating the danger of broken blades.

A blast of air from the motor ventilating fan is directed to the front of the saw to blow the sawdust away. The handles of the device are so placed as to give good balance and to eliminate wrist strain. The total weight of the outfit is 31 pounds.



Increases Shop Production

This hand saw cutting up to 3-in. planks can be used on many jobs that a table or larger circular or a band saw will not handle, or to which it is not always convenient to take the material.

Publications Received

Coal in Oklahoma. Oklahoma Geological Survey, Norman, Okla. Bulletin 4. Price 85c. Covers the history, production, location, etc., of the coal beds of the state. The bulletin is illustrated with photos and maps of the coal areas.

The Market Data Book. G. D. Crain, Jr., Chicago, Ill. Pp. 439; 5x8 in. A directory of class, trade and technical publications, with information regarding the fields covered by these publications.

Coal Statistics for Canada for the Calendar Year 1925. Dominion Bureau of Statistics, Ottawa. Pp. 99; 6½x9½ in.; tables. Price, 25c.

Recent Patents

Loading Machine; 1,601,978. Norton A. Newdick, Columbus, Ohio, assignor to The Coloder Co., Columbus, Ohio. Oct. 5, 1926. Filed Dec. 11, 1922; serial No. 606,241.

Mining Machine; 1,602,156. Morris P. Holmes, Claremont, N. H., assignor to Sullivan Machinery Co., Chicago, Ill. Oct. 5, 1926. Filed July 3, 1924; serial No. 723,954.

Aerial Tramway; 1,602,271. Gilbert M. Kilcarr, New York City, assignor to Interstate Equipment Corp., New York, N. Y. Oct. 5, 1926. Filed Jan. 18, 1926; serial No. 82,050.

Rock-Drill Bit; 1,602,498. Edward W. McCanna, Butte, Mont. Oct. 12, 1926. Filed Dec. 26, 1923; serial No. 682,776.

Self-Loading Car; 1,602,779. Walter Prockter, Huntington, W. Va. Oct. 12, 1926. Filed Dec. 14, 1925; serial No. 75,398.

Preservative Treatment of Wood and Other Materials; 1,602,959. Arthur Arent, Des Moines, Iowa, assignor to the Arthur Arent Laboratories, Inc., Des Moines, Iowa. Oct. 12, 1926. Filed Dec. 14, 1925; serial No. 75,404.

Mining Machine; 1,602,932. Thomas E. Pray, Chicago, Ill., assigner to the Goodman Mfg. Co., Chicago, Ill. Oct. 12, 1926. Filed April 3, 1922; serial No. 550,192.